Drug and Cosmetic Industry

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VITAMIN C

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COATED *l*-ASCORBIC ACID—97.5%
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- Roche produces every useful type of *l*-ascorbic acid to meet virtually every manufacturing need.
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- Quick delivery from strategically located warehouses.
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l-ASCORBIC ACID, U.S.P. 'Roche'

TYPES	DESCRIPTION AND USES
GRANULAR TYPE 20-60	100% (±) passes through 20 mesh. 95% is retained on 60 mesh. Similar to granulated sugar in particle size. Satisfactory for direct addition to dried granulations.
FINE GRANULAR TYPE 40-80	100% (±) passes through 40 mesh. 95% is retained on 80 mesh. A free-flowing product similar to table salt in particle size. Recommended for tablet granulations where fine powder is considered less suitable because of denser packing.
SUPERFINE GRANULAR TYPE 60-100	100% (±) passes through 60 mesh. Approximately 25% remains on 100 mesh. 45-50% passes through 100 mesh and remains on 200 mesh. 25-35% passes through 200 mesh. A very fine free-flowing crystal suitable for dry gelatin capsules or tableting. Useful in dry mixtures, food supplements.
FINE POWDER TYPE 100	100% (±) passes through 100 mesh. Produced by grinding crystalline material. Non-abrasive on tableting dies. Widely used for granulations, solutions, food supplements. Minimizes fractionation of particles in dry mixtures.
ULTRA FINE (MICRO) POWDER TYPE 325	Minimum 99% through 100 mesh. Minimum 90% through 200 mesh. Milled extremely fine. Practically devoid of abrasive action on cutting dies. Screen tests above 200 mesh are unreliable because of variations in technique, equipment, humidity, static charges, etc. Sedimentation tests and measurement of particle size in microns reveal that 60-70% of Roche material is smaller than 44 microns (equivalent to 325 mesh).
AMPUL TYPE	Very fine crystals—easily dissolved. Minimum color. Specially produced and tested for use in parenteral solutions. See Roche technical brochure "Notes on Vitamin B, and Vitamin C Parenteral Solutions" for complete details.
TYPE F	Especially produced for use in the food industry. Free-flowing, will not dust or clump, dissolves easily. U.S.P. in quality. 100% through 50 mesh. 98-99% remains on 200 mesh.

COATED *l*-ASCORBIC ACID—97.5% 'Roche'

DESCRIPTION

Coated ascorbic acid 97.5% 'Roche' is a fine, white, or nearly white powder. It is pure U.S.P. ascorbic acid powder coated with ethyl cellulose. The manufacture of coated ascorbic acid is licensed under Patent No. 2,410,417 to Roche and customers of Roche.

SPECIFICATIONS

Particle Size	100% through 16 mesh screen 75-92% through 40 mesh screen 45-80% through 60 mesh screen 35-60% through 100 mesh screen
Assay	Minimum 97.5% *l*-ascorbic acid
Identity test	Positive for *l*-ascorbic acid
Loss on drying	Negligible

USES AND DATA

Ethyl cellulose coated ascorbic acid 'Roche' has these advantages in pharmaceutical tablet manufacture:

- Small size, high potency (250-500 milligrams) tablets of light color can be made from dry granulations with very little excipient.
- Aids in eliminating chipping and capping during compression.
- Retards discoloration, mottling during abnormal storage conditions.
- Reduces contact of ascorbic acid with reactive materials.
- Rapidly available in aqueous solution for assay.
- Provides a tablet with slower release of ascorbic acid, tending to reduce localized acidity sometimes experienced with high potency tablets.

FOOD MANUFACTURERS

- Manufacturers of cured meats can use this type to advantage for retarding smokehouse activity, and for better protection in spice mixtures. It may also provide longer protection of color and flavor during storage and display.

DATA ON PARTICLE FINENESS

Based on U.S.P. XV pages 934-5; N.F. 10, pages 702-3; *Langes Handbook of Chemistry 9th Edition, page 911

The fineness of "powders" is described in both the U.S. Pharmacopeia and National Formulary in terms which are related to the number assigned to a standard sieve made of woven wire cloth. The size of wire, and sieve opening are standardized together with permissible variation in both average and maximum openings.

Sieve Number	Sieve Opening in Microns	Sieve Opening Mm.	Permissible Variation in Average Opening Per Cent	Permissible Variation in Maximum Opening Per Cent	Wire Diameter Mm.
50	297	0.297	± 5	± 25	0.170-0.253
100	149	0.149	± 6	± 40	0.096-0.125
200	74	0.074	± 7	± 60	0.045-0.061
*325	44	0.044	± 5	± 60	0.036

Standards are established for defining the fineness of powdered chemicals, together with a technique for determining the uniformity of fineness. The types of powders described in the U.S. Pharmacopeia and National Formulary do not represent the full range of particle sizes commercially available. No procedure is given for the determination of particle size in the "ultra-fine" or "micro powder" range, sometimes referred to as No. 325. This requires a sedimentation method and measurement in microns. Ordinary sieving methods are inaccurate.

The variation possible in the standard sieves plus such variables as the motion applied to the screen and physical characteristics of the powder being screened affect accuracy and duplicability of screening tests. Particle size specifications based on mesh sizes must always be regarded as nominal rather than as strictly accurate limits of particle size and distribution.

SODIUM *l*-ASCORBATE** 'Roche'

This is the sodium salt of *l*-ascorbic acid. It is available as an odorless, tasteless, anhydrous, fine white powder or fine granular substance.

The antiscorbutic activity is in molecular proportion to *l*-ascorbic acid, one milligram of the sodium salt being equivalent to 0.889 milligram of the acid, or one milligram of the acid equivalent to 1.124 milligrams of sodium *l*-ascorbate.

Highly soluble in water—62 grams/100 ml at 25°C, 78 grams/100 ml at 75°C. Aqueous solutions are unstabile, easily oxidized on exposure to air, or other factors which affect *l*-ascorbic acid.

The pH of a sodium *l*-ascorbate solution is from 5.6 to 7.+ as compared with a pure *l*-ascorbic acid solution at pH 2.3-2.5. The more neutral characteristic of the sodium salt recommends it for high dosage oral forms where gastric sensitivity to lower pH might be undesirable. It is useful in combination with ingredients which would react unfavorably under more acid conditions. Products can be buffered to a suitable pH by combining sodium *l*-ascorbate and ascorbic acid together.

Commercial forms of sodium *l*-ascorbate are not recommended for preparation of parenteral solutions. It is more satisfactory to prepare suitably buffered solutions of 'Roche' ampul type *l*-ascorbic acid, using sodium bicarbonate according to the special Roche method described in our technical brochure, "Notes on Vitamin B, and Vitamin C Parenteral Solutions."

Sodium *l*-ascorbate is of value as an antioxidant for use in comminuted meats and in curing pickles for hams, bacon, and corned beef. Because it is the salt of *l*-ascorbic acid (vitamin C), a substance naturally occurring in meats and identified in the U.S. Pharmacopeia, it may be preferred to antioxidants in the "chemical additive" class.

THESE PRODUCTS ARE FOR ANTIOXIDANT USE ONLY. IF USED IN FOOD PRODUCTS, NO CLAIM FOR NUTRITIONAL VALUE CAN BE MADE.

****Sodium d-isoascorbate, 'Roche'**, antioxidant with virtually no vitamin C activity. A white, free-flowing crystalline material. Slightly less soluble than *l*-ascorbic compounds. When replacing *l*-ascorbic acid, 23% more should be used to obtain equal antioxidant activity and 8% more when replacing sodium *l*-ascorbate. These differences are due to the presence of both sodium and water of crystallization which are inactive. Literature on request.

d-isoascorbic acid 'Roche'—antioxidant. Similar to sodium d-isoascorbate described above. Useful where acid reaction or absence of sodium is desirable. For equivalent antioxidant activity use 23% less than with sodium d-isoascorbate, or the same amount as with *l*-ascorbic acid (vitamin C).

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"Maybe he's an investigator from a Congressional committee."

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Keeping Posted

The Kefauver Hearing

There is much food for thought in the testimony given before the Kefauver Senate Subcommittee. There is no question in the minds of the creative pharmaceutical manufacturers nor in the minds of the progressive members of the medical profession that the advance in medicine is due to the truly new drugs, and that these new drugs are only created through extensive and expensive research. Furthermore, it is realized that, once these products are discovered and marketed, the medical profession must be educated to their proper use, and that continued clinical research must be provided by the creators, so that all the facts regarding these drugs—their advantages and their shortcomings—will be brought to light and placed before the medical profession by way of publications and distribution of this information to the medical profession.

The cooperation which exists today between the medical profession and the leading pharmaceutical manufacturers did not come about over night or for the asking. This cooperation has been carefully developed over many years of careful planning, and at great expense. The ability of a pharmaceutical company to obtain the best men in the medical profession to conduct clinical research on its products has been made possible only by the long, careful cultivation in the medical profession of an attitude of respect for, and confidence in the pharmaceutical manufacturer.

It is this set of conditions that is responsible to a great extent for the prices which these creative drug manufacturers must obtain for their products. The intensive research and development program of these manufacturers causes great and rapid advances, but the obsolesence rate of even recently discovered drugs is high. This means that frequently manufacturers have great difficulty in recovering their research and other investment costs in a new product before a still better one appears and takes over the market.

Attempts to place controls on the prices of pharmaceuticals would be most difficult in the first place. But surely they would upset the situation that has made this country the foremost in medical progress. Certainly, if the government interfered to any marked extent with the present set-up, this country would soon lose its enviable position and fall to the level of, or even behind other nations of the world. Furthermore, it would appear that if this country is not able to carry on in medical research and development as it has been carrying on, the rapid advancement of medical progress will come to a grinding halt, not only in this country, but throughout the world.

Increase in Trademarks

A total of 23,064 applications for trademarks was filed with the U. S. Patent Office in 1959, and 18,320 registrations were issued, for the second largest number of applications and registrations in any one year. Trademark applications numbered 1,060 more than in 1958, and there were 2,968 more registrations in 1959 than in 1958. Renewal, which reflects at least 20 years of continuous use, was granted to 2,955 trademarks.

There were a number of interesting court cases involving trademarks in this industry.

Pepsamar and Pepto-Bismol. One of the cases concerned the marketing by Sterling Drug of Pepsamar, pink colored medicine for the relief of stomach upset. The product had the same pink color which Sterling emphasized in its advertising, and practically the same formula as Norwich's Pepto-Bismol, the leading drug of its type. Sterling's decision to market such a product was the result, in part, of its "pique" at Norwich's reduction of the price of aspirin to a point below that charged by Sterling. Sterling even advised Norwich that, but for the advice of counsel,

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Formulating your after-shampoo cream rinse with TRITON X-400 gives you important selling points for advertising and merchandising. Builds repeat sales, too. This cationic quaternary ammonium compound rinses out every bit of soap film . . . lubricates the hair without grease. Brings out highlights . . . makes hair silky soft. Reduces static electricity . . . makes hair easier to comb and more manageable. Isn't it worth a try? Write for samples of TRITON X-400 and formulating help.

Chemicals for Industry

ROHM & HAAS COMPANY

WASHINGTON SQUARE, PHILADELPHIA 5, PA.

TRITON is a trademark, Reg. U.S. Pat. Off. and in principal foreign countries.

TRITON X-400

it would have sold Pepsamar in the same triangular-type bottle which was a familiar feature of Pepto-Bismol.

Largely because the labels and packages of the respective products were different enough in appearance to be distinguishable at twenty feet, making it unlikely that purchasers would mistake one for the other, the appellate court ruled that there was nothing illegal in Sterling's use of the pink color.

Brylcreem and Valcream. The defendant in the second case was the maker of Vaseline Hair Tonic who, after studying the marketing techniques of Brylcreem, the leading cream hair preparation sold in a tube, brought out a similar product of its own. The trademark adopted for the product, Valcream, was selected from a group of Brylcreem type marks, which appeared in a list of 250 marks suggested by the defendant's advertising agency. The color scheme of the Valcream packaging was somewhat similar to that of Brylcreem, the same citrus type perfume was used, the sizes were the same although one had been unique to Brylcreem, and the prices for the products were the same.

Despite proof that there had been confusion of purchasers and in the trade, the court concluded that the defendant had only done what it had a right to do, that the confusion was really the product of carelessness and that there was no likelihood that prudent persons would be confused.

Sominex and Somnifac. A third case resulted in an injunction. There the company marketing Sominex complained of the defendant's sale of an identical product, a two-tone blue and white tablet procured from the plaintiff's own supplier, under the mark Somnifac. The shape of the defendant's bottle and the color scheme of its label were virtually identical with that used by the plaintiff and the material printed on the labels was similar, where not identical.

In the court's view, the similarity between the trademarks, standing alone, would not have been wrongful, but the defendant transgressed by appropriating "practically every feature which the public would be likely to recognize in the plaintiff's product."

Other proceedings found conflicts between the following marks:

Chanel No. 5
perfume and other cosmetics
Prestonal
relaxant drug
Theraforte
therapeutic nutritional preparation
The Final Touch
cologne

Aren
medicated baby lotion
Anahist
antihistamine
Diafen
antihistamine
Phenergan
antihistamine
Noxema
cosmetic products, including skin cream and talcum powder

Ravel No. 9
perfume
Trestonal
tonic tablets
Terraforte
antibiotic preparation
Derniere Touche
(translated, Final Touch)
face powder
RN Creme
hand creme
Almehist
antihistamine
Diathen
diuretic
Phenistan
antihistamine
Milzema
skin cream

No conflict was found between the following marks:

Glow
shampoo
Jean Marie Farina
perfumes

Glo-Ray
hairdressing
Janmarie
perfumes

Firminich—Glidden Agreement

Firminich, Inc., New York, has entered into a long-term agreement with The Glidden Company to distribute certain aromatic products of its Organic Chemical Division in the United States and Canada. Under the agreement, which became effective January 1, Glidden will provide Firminich wth most of the aromatic products of its Organic Chemical Division on an exclusive basis. In addition, Firminich will execute all marketing and sales development programs in connection with these products and will exchange technical information with Glidden to insure uniformity of quality as well as high olfactory and organoloptic standards.

As a result of long-range development, the Glidden research group at Jacksonville, Florida, has created and patented processes for a wide range of synthetic terpene chemicals for perfumes and flavors. This includes geraniol, linalool and citronellol and its esters, as well as hydroxy-citronellal, citral, ionones and methyl ionone. These products are said to be manufactured in qualities which are essentially chemically pure. Through Firminich, Inc., they will be made available at competitive prices and in unlimited quantities.

The announcement indicated that the agreement will be extended to embrace most world markets. However, Glidden continues unchanged its existing close association with A. Boake, Roberts & Company, Ltd., of London, in the development of new and improved processes for producing aromatic terpene chemicals. An important achievement in this field is the complete synthesis of laevo-menthol developed by Glidden and now selling in commercial quantities.

Revlon Buys Asthma Drugs

Revlon, Inc., has purchased the Asthmanefrin Company of Portland, Oregon, which manufacturers products for the relief of asthma under the trademarks Asthmanefrin and Vaponefrin. Sales volume is about two million dollars a year, according to Revlon's President Charles Revson. Asthmanefrin will be integrated into Revlon's wholly owned Thayer Laboratories, which was established for the manufacture of proprietary drugs. Thayer has introduced three new medications developed in their laboratories: Femicin, for relief of feminine pain; Spectran-B, a cold tablet; and Delimine Compound, an antacid tablet.

Lascoff Award to Fred. Lascoff

Frederick D. Lascoff of New York has been selected by the panel of past presidents to be the 1960 recipient of the Annual Award of the American College of Apothecaries. The award, which will be presented

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at the annual convention of the College in February at the Americana Hotel, Bal Harbour, Florida, is presented on the basis of the many contributions made by Dr. Lascoff toward the advancement of pharmacy.

The College established this J. Leon Lascoff Memorial Award in 1946, in honor of one of the founders of the organization, the late J. Leon Lascoff. This year's recipient, Frederick D. Lascoff, is his son.

Dr. Frederick D. Lascoff owns and operates the New York City drug store known as J. Leon Lascoff & Son Apothecaries, which was established in 1899.

Boujois Buys Helene Pessl

Bourjois, Inc., has purchased for cash all the outstanding shares of Helene Pessl, Inc., manufacturer and distributor of Little Lady and Fifteen lines of toiletries. Helene Pessl will be operated as a wholly owned subsidiary, with Arnold Perlman, founder of the company, continuing in an advisory capacity.

Little Lady, the originator of children's toiletries, was introduced in 1944 and established a market in a completely neglected area. The recently introduced Fifteen also provided an industry "first" by becoming the initial toiletries line exclusively aimed at the 10-through-15-year-old classification of young women.

Blanchard Buys Rimmel

Parfums Blanchard has acquired Rimmel, Inc. Rimmel, the original French formula eye makeup line, will be completely modernized and backed by cooperative advertising plus a campaign of national advertising. Many of the new items will be imported directly from Paris.

CSC Zinc Bacitracin Patent Upheld

Commercial Solvents Corporation's patent position as the originator and exclusive producer of zinc bacitracin for the animal feeds industry has been upheld with the settlement of CSC's suit against Grain Processing Corporation for infringement of Commercial Solvents zinc bacitracin feed supplement patent No. 2,809,892. In an agreement which was the basis for a consent decree entered in the U. S. District Court, Southern District of Iowa, Grain Processing admitted its infringement of the patent. The decree bars Grain Processing from making or selling feed supplements containing zinc bacitracin.

SKF Halts Imitator

In a suit brought by Smith, Kline & French Laboratories against Crown Drug Company of Houston, Texas, a federal judge prohibited Crown from "dealing in any way whatsoever" with imitations of several SKF products. SKF had charged Crown with unfair competition and trademark infringement, noting that Crown had dealt in copies of SKF products for the "obvious purpose and effect" of having druggists substitute the imitation products in prescriptions calling for SKF drugs.

In the action, in which a permanent injunction was issued, SKF was awarded $6,250 in damages. Also, Crown's owner, William Broder, was held in contempt of court for advertising and selling his imitation products in violation of the preliminary injunction.

The products involved in the decree include Dexedrine tablets and Spansule capsules, Dexamyl tablets and Spansule capsules, Eskabarb Spansule capsules and Teldrin Spansule capsules.

The judge stated that Crown "has capitalized on imitation and suggested substitution to the extent of 90 per cent of his business."

"Lip Quick" Litigation

Omega Manufacturing Corp. of Inglewood, Calif., which has given an exclusive license to Richard Hudnut for the sale of the Lip Quick roll-on lipstick described in this magazine (September 1959, p. 327) is instituting suit to protect its own and Hudnut's position.

Legal action for an injunction and $2 million in damages has been filed in the Superior Court of Los Angeles against Peko, Inc., Joseph Pepin, William Meyst, Tennies S. Kolts, and Frederick I. Ferrier. Omega claims that it has an exclusive license from Joseph Pepin to manufacture and sell a roll-on lipstick, and that all of the defendants and Pepin are conspiring to sell a similar roll-on lipstick in competition with Omega and Hudnut.

Legal Talent and Salk Vaccine

In the recent six-weeks jury trial of the five manufacturers of Salk polio vaccine, they were charged by the government with conspiracy in antitrust activities, the charges being dismissed by the judge after the government finished its presentation. We like to think of the law firms involved. Certainly the accused manufacturers all obtained top-flight legal talent.

Pitman-Moore was represented by Sullivan & Cromwell, a firm that goes way back in the history of this country, and a firm with which the late John Foster Dulles was associated. Merck & Co. was represented by Hughes, Hubbard, Blair & Reed, a firm whose first name comes from the late Supreme Court Justice Charles Evans Hughes, and a firm with which Oscar Ewing was long associated. Eli Lilly and Company was represented by Dewey, Ballantine, Bushby, Palmer & Wood, of which the first named partner is former New York Governor Thomas E. Dewey, and whose name in the firm replaced that of Elihu Root. Wyeth Laboratories was represented by Donovan, Leisure, Newton & Irvine, whose first named partner was the late "Wild Bill" Donovan. All these firms are located in New York. Parke, Davis & Company was represented by Covington & Burling of Washington, D. C., a firm with which Dean Acheson was long associated. Incidentaly, Gerhard Gesell of Cov-

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CSC makes available the more than 50 formulas of specially denatured alcohol authorized by the Bureau of Internal Revenue. These are usually prepared from 190 proof ethyl alcohol but anhydrous formulas are also available. All authorized formulas of completely denatured alcohol also available—either anhydrous, 190 or 188 proof.

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ington & Burlington, who was the Parke, Davis attorney in this case, is representing Upjohn in the antibiotic case before the Federal Trade Commission. The dismissal of the charges even before the defense had presented its case was rather unusual. However, Justice Department Litigation Chief Lewis Bernstein had built his case largely on the testimony officials. This opened the way for U. S. Judge Phillip Forman's finding that this same testimony "tends to establish a reasonable hypothesis of innocence."

It appeared to the judge that the government itself was mainly responsible for the uniform pricing, and not the companies. Under the "most favored customer" clauses of the contracts with the Department of Health, Education and Welfare, and under similar contracts with local authorities, a company granting a price cut to any one customer had to extend it to all. This, found Judge Forman, put a "floor" under prices. Also, when a company tried to raise prices above those of other makers, it was pressured by government purchasers to get back in line.

New Direct Selling Cosmetic Firm

Since Nutrilite Products, Inc., has ceased to sell their Edith Rehnborg Cosmetics directly and has turned over the sales of these products to Mytinger & Casselberry, Inc., which firm has been exclusive distributor of the Nutrilite Food Supplements from the beginning, several of the former officials of Nutrilite who were working on this cosmetic project have formed their own cosmetic organization known as Direct Selling Incorporated, located at 185 Mountain Road, Laguna Beach, California. These officials are Luther G. Hester, Fletcher C. Kettle, Ted R. Grose, and Juanita Morrison, formerly president, executive vice-president, director of sales, and advertising and sales promotion manager, respectively, of Nutrilite Products. The first product the new organization is marketing is Nature Home Permanent Wave. C. A. Haln has also resigned as vice-president for marketing of Nutrilite Products, but he is not connected with the new firm.

Fair Trade Law Efforts Renewed

Renewed efforts are under way to obtain passage of a national fair trade law, now that Congress has recovened. The Harris Bill, H.R. 1253, has been reported out of the House Interstate and Foreign Commerce Committee. It awaits action by the House Rules Committee to put it on the House floor for debate. In the Senate, the Humphrey-Proxmire Bill, S. 1083, is under consideration by the Fair Trade Subcommittee of the Senate Interstate and Foreign Commerce Committee. Action of the full committee is necessary before the bill can move forward. Many are of the opinion that, the fact that 1960 is a national election year, will greatly benefit the prospects of passage of a bill.

Clinical Pharmacology Program

The Burroughs Wellcome Fund has established a program of grants to medical schools to maintain new faculty positions in clinical pharmacology. During the next five years, the Fund will award five grants to medical schools to underwrite the salary of a full-time teacher in clinical pharmacology, each of the grants being for a total of $75,000 over a five-year period.

A clinical pharmacologist, explains the Fund President W. N. Creasy, is a physician who first brings new drugs from the completed laboratory research level, to use in the human subject. This highly trained scientist does the first, very cautious, trials on man to determine proper dosage, any harmful effects, and therapeutic effects in the human. It is his responsibility to observe critically the action on the blood and on all vital organs such as the liver, heart, kidneys, and intestines. His aim is to determine that the drugs are safe for clinical investigators for use in man in designated dosages to achieve desired therapeutic effects.

Clinical investigators are physicians in hospitals or private practice who apply new drugs to specific diseases in enough patients to confirm that their usefullness and safety warrant making them commercially available for use by the medical profession.

The reason for setting up the grants is the shortage of qualified investigators specializing in clinical pharmacology, due to the small number of medical schools with training programs in this highly specialized work, so important in the investigation and evaluation of new drugs.

Medical Expenses and Insurance

The American public spent an average of $95 per person for medical care in 1958, the Health Insurance Institute reports in its Source Book of Health Insurance Data. Total expenditures for personal medical care in 1958 were $16.7 billion, comprising nearly 6 per cent of the public's outlay for all its personal needs.

Hospitals accounted for $4.5 billion of the total, doctors for $4.8 billion, dentists for $1.7 billion, drugs, medicines, and orthopedic appliances for $4.4 billion. The remaining $1.3 billion went for all other medical costs, including private duty nurses, nursing homes, chiropractors, eyeglasses, and the expense of acquiring health insurance.

With regard to health insurance, the Institute reports:

(1) More than 123 million had health insurance at the end of 1958.

(2) Insurance companies covered 72 million persons, Blue Cross-Blue Shield 5.5 million, and independent plans five million. Some were insured by more than one organization, the net number, after allowance for duplication, being 123 million.

(3) Ninety-one per cent of the 123 million persons

who had hospital insurance also had surgery insurance.

(4) Eleven states had more than 75 per cent of their populations insured, 29 states ranged from 50 to 75 per cent, and 10 states were under 50 per cent. New York State led with 90.5 per cent.

(5) American families are budgeting more of their income toward purchase of health insurance. In 1958, 1.9 per cent of disposable personal income went for health insurance, compared to 1.5 per cent in 1954, and 0.8 per cent in 1949.

(6) The amount of premiums paid to insurance companies, Blue Cross-Blue Shield, and other hospital-medical plans in 1958 was $5.9 billion.

(7) Health insurance benefit payments totaled $4.7 billion in 1958, almost five times the amount paid in 1949.

(8) More than 1,200 insuring organizations provided health insurance in 1958, including 708 insurance companies, 83 Blue Cross and 66 Blue Shield plans, and more than 400 other plans.

(9) Nearly 22 million persons, one out of every eight in the U. S., were admitted to short-term general hospitals in 1958.

(10) There were 451,000 persons confined to hospitals on the average day in 1958.

(11) Men were more prone to injury than women, injury rates for the year being 331 per 1,000 for men, against 229 for women.

(12) The home accounted for the greatest percentage of injuries with 41 per cent.

Hazel Bishop Control Bought

Hazel Bishop Inc. has been taken over by a group headed by Daniel Van Dyk. Mr. Van Dyk was elected president and chief executive officer after he and his associates paid $1.4 million for 350,000 shares of the common stock held in the treasury. Mr. Van Dyk also has an option to buy 300,000 shares owned by Raymond Spector, chairman, at $6 per share. Mr. Spector also assigned to Mr. Van Dyk all voting rights to 325,000 shares he would continue to own when the option was exercised.

Mr. Van Dyk is a director and former president of Eversharp, Inc. He is also a director of General Acceptance Corporation, Clinton Engines Corporation, and the Stuyvesant Insurance Co. Saying that he would retain his directorates in other companies, Mr. Van Dyk added that he would devote his "energies to the presidency of Hazel Bishop." He said that a "new, aggressive sales, advertising and promotional campaign is being planned." The company's product line will be broadened.

Other newly elected directors are: Robert Bragarnick, former vice-president and marketing director for Revlon; Davis B. Charney, chairman of Highway Trailer Industries, Inc.; Julius Epstein, a director of the Spector Mid-States trucking concern; Herman L. Johnson, Jr., Hazel Bishop executive vice-president; and Albert Parker, partner of the New York law firm of Parker, Chapin & Flattau. Remaining as directors are: Mr. Spector; Dr. Charles McKhann, a director of Stanley Warner Corporation; and Wickliffe Shreve, partner of the investment banking firm of Hayden, Stone & Co. Mr. Charney is heading a new five-man executive committee.

Abbott Plant in Argentina

Abbott Laboratories has dedicated in Argentina its largest overseas plant, covering 250,380 square feet on an 86½-acre site near Buenos Aires. The new plant is equipped to manufacture a wide range of Abbott products in the form of liter solutions, emulsions, injectables, and tablets. The new chemical plant produces and purifies raw materials required by the pharmaceutical industry. A separate Welfare Building has a nursery for the children of employees, dining rooms, consulting and recreation rooms, all designed and decorated by local Latin American artists. Abbott President George R. Cain said: "This model plant has many features unique in Latin America and will enable us to meet not only needs in Argentina but eventually to export to other South American countries."

Cosmetic Pretesting Amendment

An amendment to the Food, Drug and Cosmetic Act setting up closer controls over cosmetics by requiring extensive tests for safety before marketing of new products seems to be in the offing. The Food and Drug Administration is expected to call on cosmetic manufacturers to consider the draft of such an amendment that will be developed by the FDA itself. From this anticipated action it seems apparent that the FDA does not altogether approve of Delaney and Sullivan to accomplish a similar purpose.

Deputy FDA Commissioner John Harvey told the Food Law Institute at its recent meeting that the view of the Department of Health, Education and Welfare is that a bill for the pretesting of cosmetics should be pushed, and noted that in the drafting of such a bill the department will have several patterns of control to choose from, such as: 1) The "new-drug" type of pretesting control; 2) The food additives type of control; and 3) The Miller pesticides law type of control.

He pointed out that under the new-drug type of control clearance is given for the marketing of a drug only on individual application of each producer, while in the case of food additives and pesticides, when clearance is given on the use of an additive or pesticide under tolerance limitations to one applicant, anyone else can use the additive or pesticide under the same conditions. He said that one of the big questions to be decided is whether clearance as to safety must be obtained through pretesting for every ingredient used in a cosmetic, or only to obtain clearance of the formulation.

Kefauver ACT ONE

Things are never as simple as they seem. Senator Estes Kefauver and his hatchetmen on the Senate Antitrust and Monopoly Subcommittee investigating the prices of drugs, have managed, through the newspapers, to make the creators of steroid hormones look like highway robbers who pick the pockets of the poor and the aged.

Taking a raw material cost, adding estimates of wastage, tableting, and bottling obtained from a private label manufacturer, the Committee attempted to compare this cost with the price the druggist pays for the goods of the leading manufacturers. No mention was made of the rigid quality controls employed by these leading houses; no mention was made of advertising and promotional activities; no mention was made of the education of doctors to the proper use of these new important drugs through detail men by continuing clinical research and the publication of the results of this research; and no mention was made of the cost of research activities. Nor, as a matter of fact, was any mention made of the fact that the manufacturer does not, as a rule, receive the full price which the druggist pays for the goods. He actually receives the price to the druggist less 20 per cent discount and a cash discount granted to wholesale druggists.

It was shown by John T. Connor, president of Merck & Co., that the cost of research and development for that company during the year 1958 totaled $17,091,000, which was 8.3 per cent of sales for that year—which totaled $206,626,000. Actually, this amount for research and development represented 31 per cent of profits before taxes leaving a net income of $27,718,000.

Mr. Connor stated that while, in 1950, Merck had 100 per cent of the steroid market with cortisone, and in 1951 still had 99.9 per cent, this was knocked down to 76.8 per cent in 1952, and, in 1954, although Merck had since developed hydrocortisone, it only had a total of 50.4 per cent of the market. With the development of Squibb's fludrocortisone in 1954, Schering's prednisone and prednisolone in 1955, Upjohn's methylprednisolone in 1957, and Lederle's and Squibb's triamcinolone in 1958, Merck's share of the market dropped all the way down to 17.2 per cent for 1958. Actually, Merck's cortisone was only 3 per cent of the market in 1956, and was off the chart as a separate item by 1958.

Mr. Connor, who followed Schering President Francis C. Brown as the second witness, was well prepared. He gave the financial facts of steroid hormones in his company, as well as the general financial facts of his company. He illustrated various facts regarding the steroid hormone industry and financial facts of his company with charts. He also brought with him two of the three men who received the Nobel Prize for their work in developing cortisone —Drs. E. C. Kendall and Philip S. Hench, who were both associated with the Mayo Clinic when the discovery took place. Also with Mr. Connor were Dr. Lewis H. Sarett who synthesized cortisone for the first time at Merck & Co., and Dr. Augustus Gibson, medical director of Merck Sharp & Dohme Research Laboratories, who has been in charge of clinical investigation of the cortical steroids from the very beginning, and who directed Merck's vast medical education program on cortisone and its successors. All of these men made statements before the committee and submitted to questioning. Mr. Connor also brought with him Eugene L. Kuryleski, director of sales and marketing of the Merck Sharp & Dohme Division, and said he was available to answer committee questions regarding competitive offerings at lower prices and in the form of free goods and other concessions which Merck felt necessary to meet.

Mr. Connor listed alphabetically 29 companies offering steroid products for prescription in this country:

Alcon	Merck Sharp & Dohme
Allergan	Organon
American Pharmaceutical	Parke, Davis
Arlington	Pfizer
Ayerst	Premo
Burroughs-Wellcome	Reed & Carnrick
Central	Robins
Ciba	Roche
Dome	Schering
Geigy	Smith Dorsey
Lederle	Squibb
Maltbie	U. S. Vitamin
Massengill	Upjohn
McNeill	Wyeth

Warner Chilcott

When asked why several smaller concerns are able to sell the steroid hormones at prices as low as one-quarter of Merck's, Mr. Connor explained that there are three categories of drug companies: the creators such as Merck, who spend large sums to develop new drugs; the molecule manipulators, who do some research to discover how the creators make their new drugs; and the coattail riders, who "neither sow nor do they reap."

Mr. Connor turned out to be such an expert witness that Senator Kefauver complained: "Every time I ask you a question you start reading." Mr. Connor, who had a total of 22 assistants with him and had spent six months getting ready to testify, replied: "I thought I would do you the honor of coming well prepared, sir." When asked why Merck's prednisolone retails in London at $7.53 per 100 tablets against $17.90 in the United States, Mr. Connor said that it is cheaper to manufacture and sell drugs abroad.

Mr. Connor told the Committee that his company spent 15 years trying to develop a cure for Addison's disease of which there are only 800 cases a year. In the search, they found out in 1949 how to mass-produce cortisone. Instead of profiteering, Merck cut the price from $200 to $20 a gram before it had a competitor, then licensed other manufacturers. Not for seven years did Merck recover its $21.8 million investment from this development. Nobel Prize winner Kendall said: "Cortisone would still be just a laboratory curiosity if those who directed Merck & Co. had not had the foresight and courage to persist in trying to make it after everyone else had abandoned the attempt."

As to the cost and selling price of prednisolone 5 mg. tablets, Mr. Brown gave the following breakdown:

Production cost of sales	$3.05
Selling expenses	4.80
Research expenses	1.20
Administrative expenses	1.22
Royalties and other expenses	.07
Income taxes	1.96
Total costs	$12.30
Profit	1.73
Price to wholesaler	$14.03
Price to retailer	$17.90
Price to consumer	$29.83

The cost of these tablets, as developed by the Committee, disregarding costs of research, sales, advertising, quality control, and all other things with the exception of raw material cost and manufacturing costs given by a private label house was as follows:

For 1,000 Tablets	
Raw material (prednisolone at $2.37 per gram)	$11.85
Wastage of 5 per cent	.62
Tableting	2.00
Bottling	1.20
Total cost	$15.67

Then, by the simple method of dividing this amount by 10 (with no regard for the fact that the packaging and labeling of the 1,000 tablets into 10 bottles instead of one bottle would increase the cost), the Committee arrived at a price of $1.57 for 100 tablets. Dividing this amount by 100, the Committee arrived at a cost of 1.6 cents per tablet, claiming that Schering and other manufacturers selling at the same price had a markup of 1,118 per cent.

In his testimony, Mr. Connor presented a statement containing "Merck & Co. hormone profits—1958." It said in part: "The Merck & Co. financial summary shows Merck & Co. net sales of steroids for 1958 to be $28,589,000, and its net profits after taxes $3,400,000 or 11.9 per cent of sales. Applying these general figures to the price of a specific product we obtained the following results:

Decadron (Dexamethasone) .75 mg.	
Cost to patient (average)	27.2 cents per tablet
Amount received by Merck (average)	14.2 cents
Total cost to Merck (average)	10.7 cents
"Markup" over cost (average)	3.5 cents or 33 1/3 per cent
Profit after taxes	1.68 cents"

The Subcommittee had as a witness Seymour N. Blackman, executive secretary of Premo Laboratories, who said large firms were overcharging the public $750,000 a year for prescription drugs, basing his estimate on "excessive" profits and sales promotion by the major drug manufacturers. The drug market, he said, has been turned into a "beautiful natural monopoly" by the large firms. He said the consumer is a "captive market," since he can buy only the drugs prescribed by the doctors and the "only competition is for the eye and ear of the physician."

Mr. Blackman accused the major concerns of resorting to "blitz" advertising and promotion techniques to "propagandize" and "brainwash" physicians into prescribing their higher priced drugs by brand names.

The Subcommittee also heard from Dr. Philip A. Berke, vice-president of Formet Laboratories of Roselle, N. J. He said that, once the large companies had developed a new drug, they refused to license its production by smaller companies who might sell it for less. He suggested that, if a large manufacturer was willing to license the production of one of its drugs, it should be compelled to license all companies regardless of size.

Dr. Ethel Percy Andrus of Ojai, California, testified in behalf of the American Association of Retired Persons and the National Retired Teachers Associa-

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TGA SCIENTIFIC SECTION MEETING 1959

WALTER W. EDMAN

L. MAGID

MURRAY BERDICK

Almost 500 attended the meeting and luncheon of the Scientific Section of the Toilet Goods Association, held December 1, 1959 in the Waldorf-Astoria Hotel in New York City. Seven papers were presented at the meeting, under the chairmanship of Walter W. Edman, with vice-chairman Dr. Herbert Heinrich and secretary H. D. Goulden.

J. W. Haefele and R. W. Broge presented "The Synthesis and Properties of Mercaptans Having Different Degrees of Acidity of the Sulfhydryl Group." Voss had previously published a discussion of the skin-sensitizing properties of a number of water-soluble mercaptans; many of these compounds were new, and the paper was abstracted at length in DRUG AND COSMETIC INDUSTRY, December 1958, pages 789 and 796. The major purpose of the present paper is to describe the synthesis, and chemical and physical properties of these new mercaptans. This mercaptan work was directed toward the design and preparation of compounds in which the acidity of the sulfhydryl group was widely varied, and stemmed from the observation that the mercaptan group was much more acid in thioglycolamide than in thioglycolic acid. Major synthetic work was directed toward exploring two classes of compounds: thioglycolic acid derivatives in which the carboxyl group was modified, and mercaptoethylamine derivatives. Behavior of the compounds toward hair is reserved for future discussion.

Dr. Peter Flesch, in "Protection of Hydrogen Peroxide Bleached Hair with Acid Solutions," noted that bleaching of hair with hydrogen peroxide damages the hair shaft. Hair may become dull and brittle, often takes up dye rapidly and irregularly, and is especially vulnerable to thioglycolates. Objective signs of damage include disruption of the normal cuticular pattern, changes in load-extension curves, increased permeability of the hair shaft to detergents, as shown by radioactive tracer studies, and profound alteration in chemical composition and behavior of the hair. The damage does not cease when the bleaching process is ended, since the hair has become vulnerable to exposure to water and neutral aqueous solutions. Every washing will inflict further damage on the bleached hair, unless the hair has been pretreated with an acid solution at a *p*H between 2.0 and 3.8. The protective effect of a single

(Continued on page 102)

HIDDEN COSTS UNMASKED*

BY A. J. D'ANGELO SMITH KLINE & FRENCH LABORATORIES

The subject of costs, hidden or otherwise, is always timely, whether business is good or bad. When sales are excellent and profits gratifying we may be tempted to become complacent, but this is just when we should be more critical of our operations, to be sure we're not cultivating bad habits that will be difficult to change if and when it should become necessary.

Let's start with material specifications—we are bound to uncover some sleepers. This applies particularly to those of us who manufacture chemicals. Are C.P. products being used where U.S.P. quality is adequate? Or could technical grade chemicals take the place of U.S.P.? Now, I'm not advocating any sacrifice in quality. This would be penny wise and pound foolish. However, in chemical manufacturing where chemicals just by the nature of the process go through a number of purification steps, it is often a waste of money to use a higher grade of materials than necessary. A periodic review of specifications should be made to see that money isn't being wasted because of unrealistic quality requirements. While we're on the subject of chemical manufacturing, let me suggest that a check be made of raw materials and intermediates. You may be surprised to find that you can purchase some of these items more inexpensively than you can manufacture them internally. On the other hand, some materials you purchase may be manufactured internally at a saving. A similar check should be made of other items used in large quantities, such as printed matter, boxes, cartons, corrugated shipping cases, and plastic parts. At S.K.F., we are now molding and lithographing the plastic parts used for Benzedrex inhalers; we are making the black boxes and liners used for mailing physician samples; we are also manufacturing our own hard-shell gelatin capsules. Annual savings on these projects have been considerable.

Next, examine the purchasing operation. Are more purchase orders or requisitions being placed than are necessary? In many instances orders can be consolidated, especially when so-called supply and expense materials are concerned, such as maintenance, operating, and housekeeping items. By accumulating requisitions of this type and ordering every two weeks or even monthly, we have reduced the number of these orders by approximately 50 per cent. Another thing that has helped reduce our purchasing costs is the buying of certain materials either annually or semi-annually, namely, materials that are stable, relatively inexpensive, and that require not too much storage space. If the annual use of an item totals $500 or less, it is purchased once a year. If the annual use is between $500 and $2,000, purchases are made every six months. Placing unnecessary orders has far-reaching effects. It not only places an added burden on the purchasing department, but it also affects receiving, material handling, analytical laboratories, and accounting. Purchase orders for raw or packaging materials should be consolidated whenever possible to take advantage of the reduced price that usually accompanies volume buying.

Another source of hidden costs is material handling. If this operation is carefully analyzed, you may find that materials are being handled unnecessarily. The use of pallets and other warehousing equipment reduces handling considerably. Another way to eliminate considerable lost motion is to provide adequate instructions on the receiving copy of the order as to where or to whom items should be delivered. It goes without saying that intelligent planning in laying out storage areas so that materials will be delivered directly to their point of use would greatly reduce the amount of wasted motion. Empty containers are often a source of unwarranted expense, either because they are handled too many times or, in the case of returnable containers, they are lost or broken. Moreover, the possibility of using bulk storage should not be overlooked. Whenever this can be justified we take advantage not only of the lower initial cost that usually goes along with purchases of tank or truck quantities, but also of the additional saving of floor space, paper work, and labor involved in the handling of full and empty containers and analytical control costs.

Next is the processing area—a spot where we can do ourselves a lot of good. Again, the material handling arrangement should be assayed: investigate the use of hoppers and bins for powders; the methods employed for manufacturing and handling of stock solutions; and the use of granulation hoppers for tablet machines so that the operator need not scoop every last ounce of granulation into machines, but can instead devote more time to quality and to watching more machines. The use of mono-rails and hop-

*Presented at the Pharmaceutical Manufacturers Association, eastern regional meeting, December 1959.

pers can also help cut costs considerably in the granulating room. By emptying the contents of a mixer into a hopper, the mixer is released and ready to receive the next batch while the previous batch is being fed through the granulator. This could save the cost of an additional mixer. Hoppers can also be used to feed grinding machines, thus eliminating hand scooping. Drying cycles should be checked to be sure that maximum drying efficiency is being realized. We have reduced the drying time of some granulations from nine to three hours, by loading less granulation on each tray. By cutting down the depth of the tray, enough additional trays were added to each rack to maintain the same over-all rack capacity. Taking full advantage of the capacity of equipment is another way to eliminate hidden costs. In a number of cases, by adding an extension to mixers, batch sizes have been increased by 20 per cent or more. Invariably in liquid mix tanks, by using the so-called free board space, batch sizes of liquids have been boosted by at least 10 per cent. By installing larger coating pans and loading existing pans with more tablets, the output of our coating facilities has been increased without additional labor. When batch sizes are increased, savings are realized on paper work, labor, and analysis—in most cases the analytical costs is the same, regardless of batch size. Larger batches also make possible longer runs on packaging equipment.

The production rate of other machines should be checked. For example, some double rotary tablet machines are rated by the manufacturer to produce approximately 1,200 tablets per minute. With modifications, this output can be increased by 50 to 100 per cent. Mechanical sifters for tablet machines eliminate hand sifting. Mechanical counters on tablet machines save considerable weighing time.

Standard yields should be reviewed periodically to be sure that maximum yields are being realized.

The packaging department is another source of hidden costs. Again, with judicious modifications, equipment can be operated at higher speeds than rated by the manufacturer. This applies to the tablet counters, liquid and ointment fillers, strip packaging machines, and the like. We are now using dual feed heads on Markem printing machines, thus doubling the output of this equipment. Brewer pipetting machines have been converted from single to double barrel, doubling their output. The conversion of slower tablet and capsule lines to high-speed lines requiring less floor space, has produced sizable savings. The addition of filling stems to straight-line fillers has increased the capacity of this equipment approximately 30 per cent. Strip packaging machines are being operated at least 50 per cent faster than rated by the manufacturer. Machines can be fabricated for assembling cellophane strip units into sample packages, thus eliminating hand operations. Machines can be made or purchased to assemble letter mailings. The use of roll labels can drastically reduce inspection costs and labeling costs in general.

If it can be justified, the addition of a small mechanical development shop will help eliminate some of the hidden costs in a packaging operation. Gadgets can be made for the mechanical transfer of containers from one machine to another, thereby reducing girlpower. Mechanical means can be employed for feeding bottles and jars to filling machines. Our packaging department is using several 180° twisters made by the Chisholm Ryder Company of Hanover, Penna., to feed bottles to filling equipment. Some of these have been coverted into inexpensive bottle-blowing devices by adding air stems to the bottom side, thereby saving the time of an operator. Hoppers may be used for delivering tablets into counting machines, to eliminate scooping, which usually requires an extra person. In fact, tablet storage drums can be converted into hoppers by fabricating a special lid and harness to act as a feed from the drum to the tablet-counting machine when the drum is hoisted and inverted over the tablet counter.

In the packaging department, down-time should be given serious consideration. Simple time recorders can be placed on machines to register their actual running time. If machines are down unnecessarily, the cause for the down-time should be investigated and eliminated. It may be worn-out equipment that requires constant adjustment or repairs, or faulty materials, or untrained personnel. Perhaps the equip-

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SCC ANNUAL MEETING

Dr. Gump receiving SCC Award from Mr. Coneybear, outgoing president.

Dr. William S. Gump, of Givaudan and Sindar, received the 1959 medal award of the Society of Cosmetic Chemists at the annual dinner dance on December 2, 1959, held at the Hotel Commodore. The award recognized Dr. Gump's scientific achievements for the cosmetic industry, including the development of hexachlorophene. Toastmaster at the dinner was Frazer V. Sinclair, publisher of DRUG AND COSMETIC INDUSTRY. The medallist's accomplishments, personally and professionally, were described by R. E. Horsey, vice-president in charge of sales for Givaudan-Delawanna, Inc., and the presentation was made by the president of the Society, S. F. Coneybear. Dr. Gump responded with an address on the history of the development and application of hexachlorophene and derivatives.

In a brief ceremony, S. F. Coneybear, as retiring president, introduced and inducted the new officers. These were H. J. Amsterdam, president; Dr. Sophie L. Plechner, president-elect to take office in 1961; Robert A. Kramer, secretary; Lester I. Conrad, treasurer; and Dr. Martin Rieger and Ted Ostrowski, directors. The retiring president will be the chairman of the Society's executive committee.

At the luncheon earlier in the day, almost 400 heard the plea for more active membership participation made by H. J. Amsterdam. James Baker reported on suggested by-law changes which were accepted by the membership. Their intent was to assure continued support by the national society of the local chapters, but to limit unnecessary contributions.

The program included the following papers. *Dr. Louis C. Barail*, "New Trends in Cosmetic Testing," *Dr. V. F. Lisanti*, "The Beauty of the Enzyme Screen," *Paul Weitz*, "Vinyl Copolymer in the Cosmetic Cosmos," *Dr. Joseph V. Klauder*, "The Closed, Open, Prophetic and Repeated Insult Patch Tests in Study of Cutaneous Reaction," *Drs. Stanley Hazen and Helmut Zander*, "Dental Calculus," *Dwight L. Miller, R. F. Anderson, Allene Jeanes, and S. P. Rogovin*, "New Polysaccharide Gum from Dextrose by Microbial Synthesis," *Dr. J. C. Houck*, "Chemistry of the Inflammatory Response of the Skin."

L. C. Barail briefly described new analytical methods used on various types of cosmetics, new research processes made with up-to-date instruments and apparatus, and the help given to research by associated fields of great value.

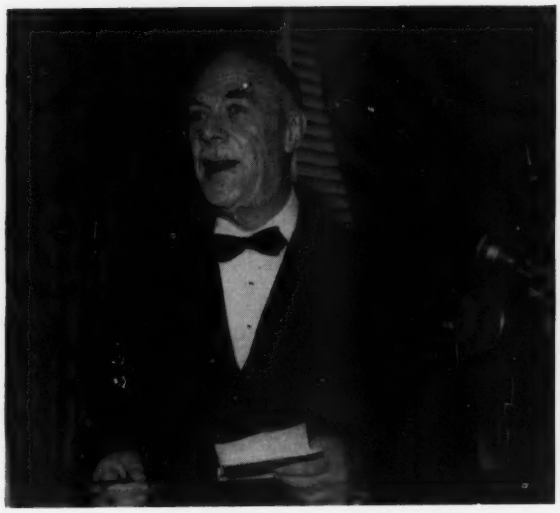
The measurement of the intensity of odors had been empirical for a long time, being done without instruments or with unreliable apparatus of low efficiency; no accurate and reproducible results were ever available. Odors can now be classified into 300 intensities, which are expressed numerically and are reproducible within a margin of 3 to 4 per cent. This is valuable in the testing of skin or air deodorants.

The use of radioisotopes as tracers in animals and human subjects studies has greatly increased. Tracer studies are conducted to establish the penetration or the superficial retention of chemicals by the skin and mucous membranes. While some radioisotopes are dangerous and others not recommended, a few are safe and give results which will greatly contribute to the advancement of cosmetic research.

Polyvinyl acetate is derived from abundant raw materials. The resin is made by a polymerization reaction; and copolymerization is important in developing unique, highly specialized resins. A specific vinyl acetate copolymer was described in more detail by *Paul Weitz* with emphasis on aerosol hair sprays.

The vinyl acetate copolymer possesses the useful property of being both solvent and water soluble. Its ability to form a water soluble salt by neutralization with AMPD (2-amino-2-methyl-1, 3-propanediol) is a useful formulating tool. Unmodified, the resin is not

Dr. Lester Apperson, chairman of the Society's program committee.



Frazer V. Sinclair, who was toastmaster at the Society's annual dinner.

S. F. Coneybear, retiring president, inducted the Society's new officers.

soluble in tap water but can be dissolved by soapy water. When neutralized it becomes water soluble. A range of properties is obtained by varying the per centage of neutralization.

This resin has satisfactory affinity for hair, good luster and curl control, and is nonhygroscopic nontacky and soap soluble. Commercial cold filling methods can be used, and tin-lined cans are used without corrosion problems.

Tests for health safety include skin and eye irritation and acute oral toxicity. A three-month inhalation study is in progress.

The purposes of the patch test, according to *Joseph V. Klander*, are: (1) to determine the range of concentration of a given substance that exerts (under the test conditions) a primary irritant action; (2) to determine if the skin is allergic to the tested substance; (3) to determine if a given substance has allergenic action sufficient under the test conditions to sensitize the skin by several or repeated applications; (4) to determine other untoward cutaneous reactions.

In study of the allergenicity of a substance, the prophetic, or repeated insult patch tests, are employed. The prophetic test comprises two applications to the skin. It determines only primary irritant and allergenic action. The repeated insult test, by virtue of repeated applications, brings out the aforementioned reactions; in addition, a fatiguing action, irritant action on the follicles—folliculitis, and other untoward cutaneous reactions.

To study *in vivo* dental calculus, *S. Hagen and H. Zander* used a polyester film 25 microns thick, contoured to fit the lingual surface and proximal surfaces of a lower anterior tooth. This film was positioned with 0.10″ stainless steel ligature wire.

The polyester strips were allowed to remain on the teeth for a desired length of time. They were then carefully removed, fixed in 10 per cent neutral formalin, embedded in celloidin, sectioned at 12 microns.

Serial sections were stained so the morphology of the deposit could be studied, to visualize areas of mineralization and to visualize the bacterial flora and its relationship to other structures. Polarized light and phase-contrast microscopy were also used to study these sections.

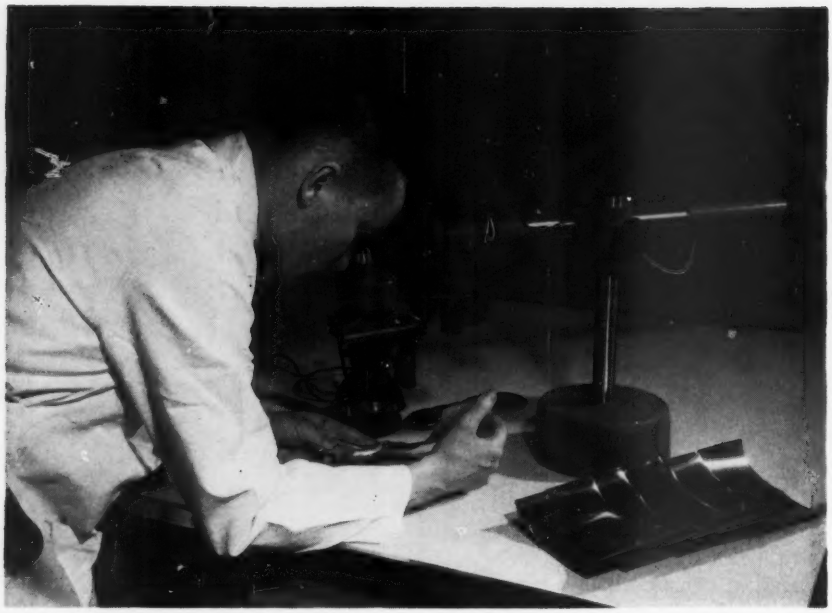
Morphologically, the calculus appeared irregularly layered. The depth of the deposit varied from specimen to specimen. A well-formed cuticle-like structure was noted on most of the smooth polyester strips, situated between the deposit and the strip.

Salivary corpuscles and epithelial cells in various stages of degeneration were noted in every specimen. Mineralization was noted on all but a few of the strips. Areas of mineralization were found to occur on the strip, in the middle of the deposit, and on the surface of the deposit. Two types of mineralization were noted. The predominant type appeared to be a mineralization process in which a pre-mineralized matrix was noted surrounding the developing areas of mineralization. Bacteria were always in and around these areas. The second type appeared to be due to a simple precipitation phenomena. Bacteria were seen in every specimen. There was a network or pattern seen in the mineralized portions of the deposit which could be recognized early in their formation.

Microbial conversion represents an important method to modify chemically an agricultural raw material. Many gums and gumlike materials can be produced by this method and several are now under investigation at the Northern Regional Research Laboratory, according to *Dwight L. Miller et al.* Three important ones that have been announced are: dextran, phosphomannan, and polysaccharide B-1459.

Dextran produced by Leuconostoc bacteria from sucrose is an important blood plasma extender. Commercialized during the Korean War, it received extensive use in hospitals and battlefields. Dextran is

(*Continued on page 86*)



Examining enameled can bodies from packed cans under magnification for coating and tinplate performance.

METAL CONTAINERS*

BY N. H. COONEN AMERICAN CAN COMPANY

While pharmaceuticals are not packaged in metal containers to the same extent as are food products and certain nonfoods, metal containers do have an important place. The rapidly expanding use of aerosol cans opens up a big new potential for metal cans in the industry. Aerosol packaging of such products as vitamins, ointments, analgesics, oral sprays, spray-on bandages, and many others is now common, or just around the corner. The recent development of six-ounce extruded aluminum and 24-ounce, three-piece tinplate pressure cans adds to the versatility of the aerosol line.

The styles and types of metal packages range all the way from the familiar little aspirin tin to five-gallon square cans for bulk shipments of pharmaceuticals. Between these two extremes are the many available shapes and styles of metal cans. These include square, rectangular, oval, and round base cans, and closures varying from hermetic doubleseams through a variety of friction covers, pouring spouts, screw caps, and sifter tops. During recent years nozzles, caps, revolving dredges, and other fittings made of plastics have glamorized and broadened the useful scope of what is somewhat erroneously known as the "tin" can. Even in the '30s and earlier, when relatively heavy tin coatings were used, cans were over 98 per cent steel. We now have untinned steel plate in many cans, and we may soon have a large proportion of aluminum "tin" cans.

*Presented at the Annual Packaging Forum of the Packaging Institute, November 1959.

A discussion of metals for packaging could take many forms. It is my intention to deal principally with rigid containers; to speak mainly of metals, but with digressions on organic coatings and plastic parts where necessary; and to treat my subject in the broad sense rather than talk about specific types of containers or the tailoring of containers to particular products.

Tinplate

Tinplate has been for many years the basic material for metal container manufacture. The thin coating of tin on steel plate imparts some highly desirable properties such as solderability at high speeds; a bright attractive finish; a degree of resistance to atmospheric corrosion, although its effectiveness in this respect is not outstanding; and a receptive substrate for organic coatings. Tin's most unique property is its anodic relation to iron under the conditions within a hermetically sealed can containing aqueous acid products. This phenomenon is a big subject in itself; it is only necessary to say here that, contrary to what you would expect from their positions in the electrochemical series, tin usually affords galvanic protection to the steel under the essentially anaerobic conditions present within a can.

Despite its many desirable properties, we are learning to get satisfactory performance with less and less tin. The reason is mostly economic, but other important incentives for eliminating tin are: first, the

known tin ore deposits are limited and, second, we are dependent entirely on foreign sources, some of which could be unavailable to our country in time of conflict or economic embargo.

TABLE 1
Trend of Tin Mill Production (Aisi)

	1935	1945	1955	1958
Total production—tons	2,294,298	3,581,073	6,150,763	5,723,289
Percentage hot diped	82.6	48.3	17.3	7.6
Percentage electrolytic	—	24.4	66.0	81.8
Percentage black plate	13.0	21.0	16.2	10.3
Percentage short terne	4.4	6.3	0.5	0.3
Av. tin coating—lbs./base box*	1.31	0.79	0.57	0.53
Shipments to container manufacturers—tons	—	—	4,563,324	4,872,445

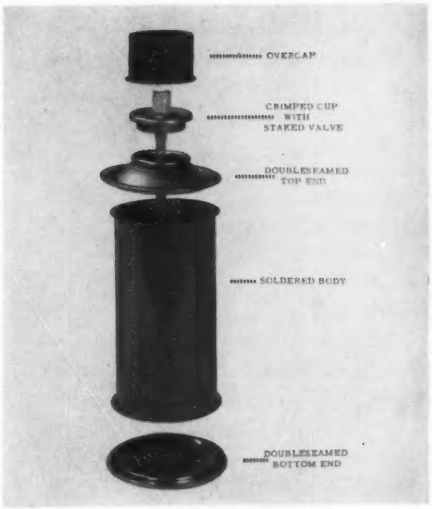
*Base box is a unit of area in the tinplate industry representing 217.8 sq. ft. of plate.

Table 1 shows the trend toward lighter tin coatings. This trend had its greatest impetus during World War II. Prior to that, nearly all tinplate was tinned by the hot dipping process. The practical lower limit of tin which can be thus applied is over one pound per base box. Today, hot-dipped tinplate is well on its way toward becoming an oddity. Within a few years, hot-dipped plate will be used only for very specialized applications, it will be available from only a few mills, and it will probably command a price differential disproportionate to the tin coating weight.

Electrolytic tin plating has largely supplanted the hot-dip process, permitting coating weights approaching zero pounds per base box. The lowest coating commonly used is 0.25 pounds per base box, which is known in the industry as No. 25 plate. This corresponds to a thickness of only about 15 millionths of an inch of tin. The electrolytic process permits the application of differential coatings, that is, a higher tin coating on one side of the sheet than on the other. Thus, when No. 25 is adequate on the outside of a can, for instance, and No. 100 is required on the inside, we use what is known as No. 100-25 differential plate.

The corrosion resistance of electrolytic tinplate is profoundly affected by the surface properties of the steel and by the nature of the tin-iron alloy layer. Within the last few years vastly improved means have been devised to measure and define these properties. We can expect continued improvement in the performance of tinplate as the knowledge now at hand, and still being gained, is translated into commercial practices. Major changes in tin mill operations are not made overnight.

The foregoing means that the container manufacturers and tinplate producers are making steady progress toward tin reduction, in the interest of holding down costs, improving performance, and freeing the industry from dependence on a metal of uncertain supply. The next step would appear to be complete elimination of tin, but this will not be achieved quickly, if ever.



Tinless Cans

Over ten per cent of the plate used in 1958 bore no tin coating at all. Part of this was what is known in the industry as black plate, or formerly as CMQ plate (Can Manufacturer's Quality), and the remainder is CTS plate (chemically treated steel). Black plate is the untinned base for tinplate, delivered to the can manufacturer as such. Cans made from black plate must be coated on the outside for protection against atmospheric rust. They can be used without inside coating for a few products, but in general, organic coatings are required.

A serious problem attending the use of black plate is the prevention of rust on the plate until the can manufacturer has a chance to coat it. A great deal of work is being done on the packaging of black plate, and on the use of a very light application of a rust inhibitor to the surface. The progress is encouraging.

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Crimping end on one-inch cup aerosol can.

COURTESY SCHIAPARELLI

PANTHENOL IN COSMETICS*

BY S. H. RUBIN, L. MAGID AND J. SCHEINER HOFFMANN-LA ROCHE INC.

The trend in the formulation of modern cosmetic preparations is to include ingredients with proven therapeutic effectiveness. In this respect panthenol, the alcohol analog of the vitamin, pantothenic acid, is particularly valuable since it has been demonstrated not only to aid healing processes by promoting epithelization and granulation of damaged tissues but also to be entirely free of sensitization and irritation problems. Panthenol is a stable, biologically active form of pantothenic acid.[28-33] When given orally, parenterally or topically, panthenol is converted to pantothenic acid, a vitamin of the B-complex group essential for growth and normal maintenance of the skin and hair. In experimental animals, one of the main effects of a deficiency of pantothenic acid is the development of lesions of the skin or hair.[1]

Ample evidence is available to demonstrate the conversion of panthenol to pantothenic acid in the animal body after topical application. Pfaltz[2] reported the local application of panthenol to give even more favorable results than oral dosage in treating achromotrichia of the black rat and alopecia of the mouse due to pantothenic acid deficiency. Burlet[3] found that panthenol applied to the skin of rats was absorbed and converted to pantothenic acid, the content of which increased in the skin both at the site of application and also in other locations. Tissue levels in deficient animals were also increased. Urinary excretion of pantothenic acid by the rat was found by De Ritter and Marusich[4] to represent 32 per cent of a topical dose of panthenol applied in a cosmetic vanishing cream base. Increase of the pantothenic acid content of human hair after rubbing a solution of panthenol on the hair and scalp has been reported by Stangl.[5] Similar increases were found by De Ritter and Scheiner.[6] *In vitro* studies by Stüttgen[27] on human skin, using topically applied, tritium-labeled panthenol, showed absorption into the lower skin layers. As noted above, animal studies have shown that panthenol is absorbed by the skin cells and found as pantothenic acid in various tissues.

There is abundant evidence to prove that topically applied panthenol is a healing agent. A number of investigators in the United States[7-10] have reported successful treatment of a variety of skin disorders with topical panthenol. The European literature contains even more abundant evidence of the benefits to be derived from such treatment.[11-25] Cutaneous ulcerations, lupus erythematosus, burns, wounds, fissures, dermatoses and corneal lesions are among the disorders successfully treated. Combes[7] in 1951 reported that topical application of panthenol favorably influenced the course of various ulcerative and pyogenic dermatoses. Welsh[10] found topical panthenol an effective adjunct in the treatment of lupus erythematosus. In addition, he found that 25 of 28 patients with various other skin disorders responded well to local panthenol treatment. No evidence of sensitiza-

*Reprinted from the Proceedings of the Scientific Section of the Toilet Goods Association, No. 32, 1959.

tion was found. Kline and Caldwell[8] reported that good results were achieved in 25 of 31 cases of various stubborn dermatoses treated with panthenol. Allergic dermatitis was one of the conditions successfully treated. Samuels[9] commented favorably on the merits of panthenol in the treatment of gangrene of the heel. Mischinger[15] reported on the healing effects of panthenol applied in the treatment of delayed healing post-operative wounds and noted it was especially effective in patients who had not responded to the usual forms of therapy. Stangl[26] and Gsell[25] have claimed benefits to the hair due to panthenol applied topically to humans with various disease conditions. Leder[24] used a panthenol ointment in the successful treatment of a severe burn which had not responded to most of the usual methods. The panthenol ointment was shown to promote epithelization much earlier and much more rapidly than the excipient of the base. In view of the evidence that panthenol penetrates the skin, and that topical application provides a safe, beneficial treatment of various skin conditions, the incorporation of panthenol into topical preparations is amply justified.

Cosmetic Applications of Panthenol

Panthenol has been incorporated in a number of well-known commercial cosmetic and pharmaceutical products for its cosmetic and therapeutic effects. Among the already marketed cosmetic and pharmaceutical preparations containing panthenol are the following forms, namely, creams, hair grooming liquids, lipsticks, after shave lotions and aerosol hair sprays.

Panthenol can be incorporated into cosmetic formulations with no adjustments other than maintaining the *p*H conditions for the optimum stability of the vitamin compound. It may be incorporated directly into the aqueous phase of standard cosmetic preparations or, in the absence of an aqueous phase, intimately dispersed in the oil phase. The cosmetic formulations containing panthenol can be prepared in the usual manner with standard equipment.

Properties of Panthenol. Panthenol is available in two forms, namely, the dextrorotatory isomer, d-panthenol, or the racemic form, dl-panthenol. The physiological activity of the racemic form is one-half that of the dextrorotary isomer. d-Panthenol is a colorless, viscous liquid, while dl-panthenol is a white, crystalline powder. D- and dl-panthenol are both very soluble in water and alcohol, but are insoluble in fats and oils. Aqueous solutions of d- and dl-panthenol are most stable in the *p*H range of 4 to 7, the optimum *p*H being approximately 6. Hydrolysis occurs at an increasing rate as the *p*H varies from the optimum *p*H as reported by Rubin.[33] The slight losses of panthenol content of cosmetic preparations incurred during manufacture and storage can be compensated for by including a suitable overage of the vitamin compound. The required overage is dependent upon the *p*H of the product, with 30 per cent being generally sufficient at *p*H 4 and 10 per cent at *p*H 6. The amount of overage, in all cases, must be determined on the basis of proper tests on the individual formulations.

Typical data on the properties of d- and dl-panthenol are shown in Table 1.

TABLE 1
Properties of d- and dl-Panthenol

	d-Panthenol	dl-Panthenol
Appearance	viscous, clear liquid	crystalline powder
Color	none	white
Solubility in water (50%)	clear, complete	clear, complete
Color of aqueous solution	colorless	colorless
Solubility in ethanol (50%)	clear, complete	clear, complete
Melting point (corr.)	—	62.3° C.

Application in Hair Lotions. A panthenol hair lotion has been successfully marketed for many years

(*Continued on page 107*)

COURTESY HELENA RUBINSTEIN

COURTESY ELIZABETH ARDEN

THE UNCOMMONLY SOPHISTICATED COMMON PATIENT*

BY E. B. WEISS DOYLE DANE BERNBACH INC.

The New Sophistication

The intelligence and sophistication of the United States public has been underestimated, not only by advertising, but also by the ethical drug industry. Those segments of our population that are of the greatest political, social, and marketing importance to the pharmaceutical industry have made remarkable strides, and they are using their new sophistication to formulate disturbing new attitudes about the doctor, the druggist, and medicine. I suggest that the pharmaceutical industry as an industry needs a program of statesmanship for this informed and, perhaps, aroused public.

Culturally as well as economically, the patient in the doctor's waiting room has gone through vast changes in the last decade. You have been keenly aware of the public's economic improvement, but have you been equally aware of the intellectual progress of the American in search of health? Perhaps more important, have you been aware of what this must mean in terms of new pharmaceutical marketing policies and programs?

The past president of a County Medical Society was quoted recently in a publication that reaches millions of homes as having said:

"Medicine is at a stage of crisis in its relationship with people. Only 15 or 20 years ago, medical men in general had an exalted social position. They were known to be dedicated men, daily making sacrifices to their cause. During this same period the public has gradually come to understand that these marvelous medical men indeed have feet of clay. Steadily our position of privilege in the eyes of laymen has been reduced . . . . Our privileged status is nearly gone."

This astounding change in public attitude clearly is not fully justified. Even so, it is a fact that only a sophisticated people could view the doctor with something less than reverence.

Moreover, the number of our medical patients with a higher education continues to increase. Larger and larger numbers continue to improve their minds. The common patient is becoming uncommonly sophisticated.

When *Life* ran a series of articles, as it did very recently, on the public's swelling revolt against doctors and drug prices, it was not simply mirroring the new sophistication of your public, it was also fueling that revolt.

You may agree or disagree, in whole or in part, but millions nodded when they read in this series:

"Through the ages, when beset by sickness, people have turned to the doctor as protector and champion. Honor and respect were draped on him. The relationship between him and his patient became a bond.

"Today this relationship has been imperiled as patients, dealing with their doctors, are assailed by doubt. There is a mounting awareness, both in and out of the profession, that the job being done by doctors today is short of what it could be. Physicians have a medical word to describe a phenomenon they admit is widespread: iatromisia, which means an aversion to doctors. The growth of iatromisia on the American scene is deeply disturbing."

You may not agree that this situation exists. The doctor may not agree. I may not agree. But I think we had all better agree that *Life* is not a totally inaccurate reporter of public attitude in this respect. There is some fire behind that smoke.

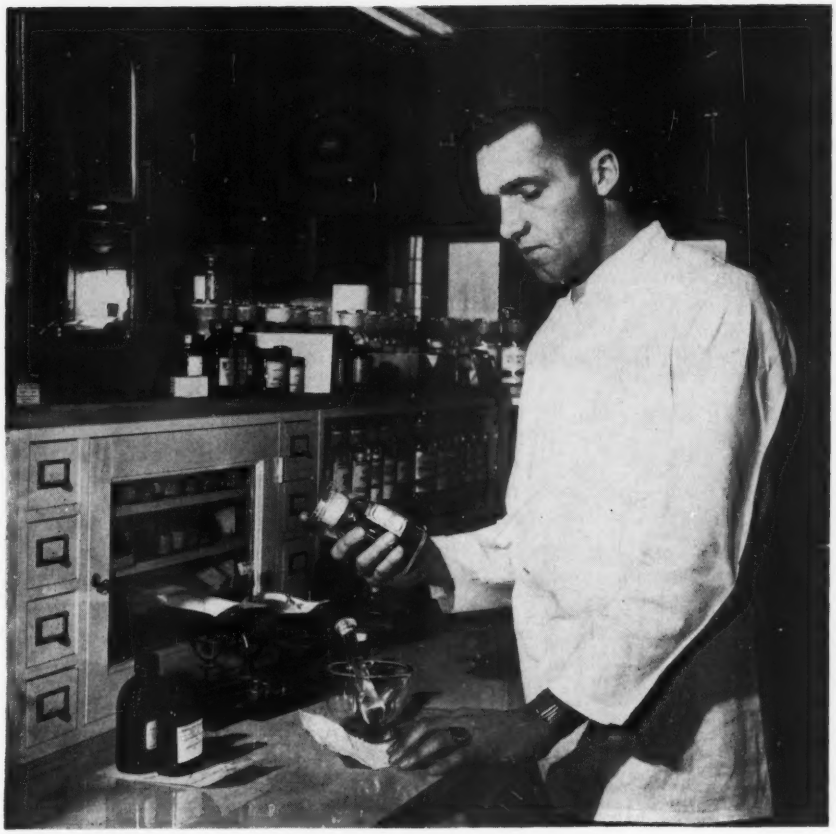
More disturbing to the ethical drug industry is whether you have adequately evaluated in your total program the new sophistication reflected in this rebellion against the historic authority of the doctor. Mind you, I do not say it has any justification. But I do contend it is real, and that to ignore it, or to be purely self-righteous involves peril.

Concerning proprietary medicines, it has been said for generations that "people buy cures, not preventives." And it was true—that is, it was true of an unsophisticated people. But sophisticated people buy many medical preventives today. They have been educated to visit the doctor for preventive check-ups.

It was traditional for the public to resist new drugs. But today the proud boast of many patients is: "My doctor said this is the first prescription he has written for this drug." You ignore this sophistication at your peril.

We are no longer a nation of semi-civilized savages. We are no longer a nation of economic illiterates.

*Abstracted from a paper presented before the Pharmaceutical Manufacturers Association, December 1959.



FREDERIC LEWIS PHOTO

And this has become especially true of our families with discretionary income—your great market for the new drugs.

By 1970, about 45 per cent of all families will have an income of over $7,500 after taxes; this in terms of the 1959 dollar. They will be the great market for drugs. These will be the families that will possess the lion's share of the discretionary dollar.

Practically all the members of these families will be graduates of secondary schools, and millions will be college graduates. The large majority of the children of these families will be college graduates, or destined for college.

Here will reside the financial power and the sophisticated power of the nation. And here will be the birthplace of one sophisticated rebellion after another, including rebellions against doctors, drugs, and druggists.

Sophistication's Effects

The druggist has never ranked so low in the public's mind as he does at this very moment. The reason? He rates public intelligence too low.

Even the medical profession is becoming aware of a tendency, among mounting millions, to look at the doctor with less of a "God and doctors can do no wrong" attitude.

As a direct consequence of this new assessment by a more sophisticated public of *all* who guard its health, we find such developments as the following:

(1) The first rumblings of state-wide compulsory systems of medical insurance. This social concept clearly has its origins in public complaints about high medical costs. Is compulsory medical insurance another step toward socialized medicine?

(2) Then, there are the first rumblings of the medical co-operative. It is being touted as a method of better utilizing medical manpower and of lowering medical costs. Public sophistication has triggered it. Is the medical co-op another step toward socialized medicine?

(3) Hooking health insurance for older people into the Government's social security program also seems to be on the way. Even though the Administration opposed it, Secretary Flemming has indicated that the executive branch might not be able to offer an alternative to the Forand bill. From compulsory health insurance for older people to similar legislation for the entire population may be a logical expectation. A sophisticated public may prod Government in this direction. Is this another step toward socialized medicine?

(4) When *Life* magazine reports, "The medical profession is frank to admit that some bad blood has welled up recently between patients and physicians,

(Continued on page 110)

"The great difficulty is of course, the subjective nature of odour classification. Once this difficulty is removed and it is possible to define exactly the quality of an odour, then logic and precision will reduce chaos to order, and the relation between odour and chemical constitution will be disclosed to us with mathematical exactness."

—Moncrieff

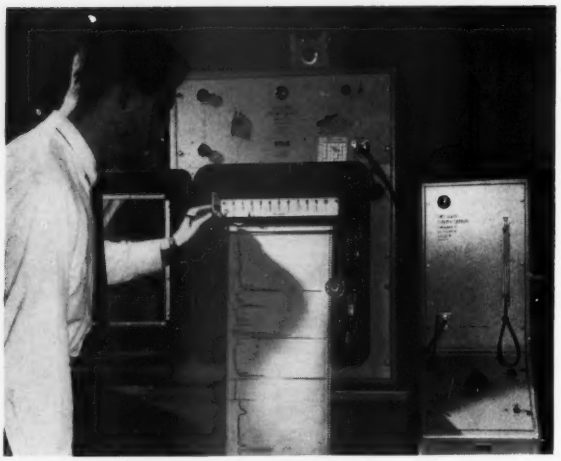


Figure 1. The Argon Chromatograph.

MEASURING AND DEODORIZING BREATH ODOR*

BY DONALD A. M. MACKAY, Ph.D.,† DAVID A. LANG, Ph.D.,‡ AND MURRAY BERDICK, Ph.D.†

Odor measurement is by its very nature a problem much more severe than that of measuring light or sound. For the senses of sight and hearing involve stimulation by the transmission of *energy*, and machines can readily be built to sense, measure, and characterize energy, even at levels below the senses' ability to respond.

Smell, however, involves stimulation subsequent to the transmission of *matter*, by amounts so small as to defy the imagination and by energetic processes as yet unknown to us.

At this stage, then, of the understanding of the physiology of smell and the development of olfaction theory, it appears that the objective measurement of odors by use of instrumentation is better oriented to the detection of the materials that are transmitted in odorous air samples than to the detection, measurement, and characterization of the energy systems involved.

Background

The development of gas chromatography over the last eight years has had tremendous impact on the classical methods of studying the composition of gases and vapors. The requirements of gas chromatographic columns have been more and more demanding on the detecting devices used to sense the changing composition of gas eluted from the end of the chromatographic column. In particular, the need for greater sensitivity has led to many developments in detection devices, the very latest of which are perhaps a million times or so as sensitive as the thermal conductivity detectors in widespread use today. Sensitivities in the parts per billion range are easily measured, and the detection of concentrations as low as 10^{-15} moles has been reported.

These new types of detector take advantage of the fact that an ion is far, far easier to detect than a molecule and, hence, are based on the ionization properties of the substances being sought. Ionization can be brought about by discharges of various types (for example, a radio frequency discharge), or by combustion in a hydrogen flame (flame ionization detector), or by contact with metastable atoms of sufficient energy (as in the α- or β-ray ionization detector, also called the Lovelock[1] or argon detector).

This last type is currently available in two commercial units, both of which have been used in these studies, although one is especially adapted to odor measurement work of this type. These are the Argon Chromatograph (Figure 1) made by W. G. Pye and Co., Ltd., Cambridge, England (distributed in the United States by Jarrell-Ash Co., Newtonville, Mass.) and the Model 10 Gas-Liquid Chromatograph, made by Barber-Colman Co., Rockford, Ill.

*Reprinted from the Proceedings of the Scientific Section of the Toilet Goods Association, No. 32, 1959.
†Evans Research and Development Corp., New York, N. Y.
‡American Chicle Co., Long Island City, N. Y.

This type of detector has a number of important advantages for flavor and odor analysis. The first paper in this series[2] showed how these detectors could make an analysis on the same sample of odorous air from essential oils, foodstuffs, etc., as would normally be taken into the nose for sensory evaluation, allowing for the first time a true and significant correlation between objective and subjective studies. The second paper[3] described how operating parameters of these detectors could be varied so that various types of response could be elicited from the detector, depending upon the chemical nature of the compounds issuing from the column, and hence allowing the detector to be used in addition as a *discriminating device* to aid in their identification.

Discussion

In this paper, the use of ionization detectors has been extended to the measurement of volatiles on breath. For the most part, this is a measurement of considerably greater difficulty than the measurement of volatiles from foodstuffs, such as bread and coffee, where a sample of air directly taken from above them contains sufficient concentration of volatiles to allow the detection of 30 or more components. This *direct sampling technique* works with air samples up to five cc in volume if other variables are properly controlled. In favorable cases, 10 cc of air containing volatiles can be inserted into the machine, but considerable departure from proper chromatographic practices has to be compensated for if useful information is to be obtained.

Many areas remain, however, where a 5- or 10-cc sample of air either just does not contain enough molecules of odorant material to cause the ionization detector to respond or, if it does, does not contain a sufficient initial concentration of them to allow their detection after a chromatographic operation which, by its very nature, must cause a considerable diminution of the initial odorant concentration.

This problem, not new to odor and flavor analysis, has heretofore been attacked by making odor and flavor concentrates. By this method, pounds or even tons of material have to be processed by a variety of concentration methods (distillation, expression, extraction, etc.), which invariably result in a grossly altered balance of constituents, if not in grossly altered constituents. This problem has been treated in detail elsewhere.[4]

The most valuable feature of the direct-sampling technique is that all these artifact-introducing processes are bypassed by sampling the volatiles in their natural representative proportions and subjecting them to stresses no more severe than the relatively mild ones of the chromatographic column.

It follows, then, that if the largest manageable air sample is insufficient for direct analysis and a concentration step thereby becomes a necessity, this concentration step should not be by techniques that have had the benefit of critical examination in an earlier paper of this series.[2] The only concentration step that can be allowed is one in which concentration can be achieved by the exposure to forces no more severe than those encountered in any case by the sample in the course of its chromatographic analysis.

Attention, therefore, was turned to the use of the gas chromatographic column itself as a concentration, or preferably, *enrichment* device. The enrichment column can take many forms. It can be another gas chromatographic column, or it can be a few grams of column packing in a cold trap. The form should be determined by the needs of the analysis, not the analysis by the form, lest the form predetermine the sample submitted to the column for analysis. Columns can be in series or parallel, contain the same

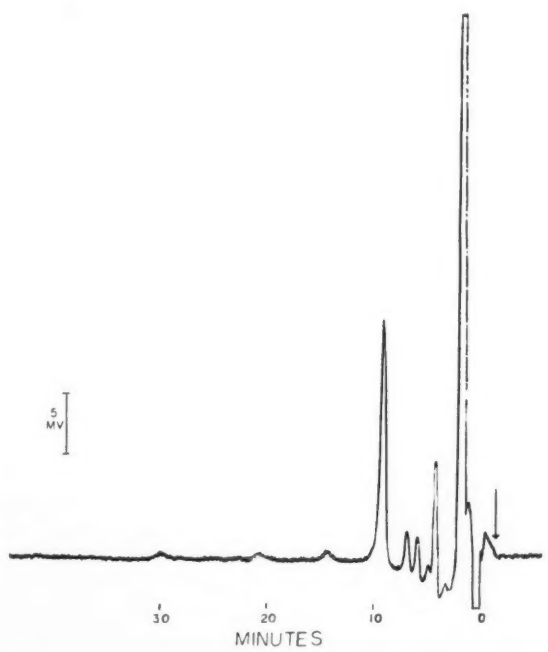


Figure 2. Five cc banana volatiles; 60 cc/minute argon; 1750 volts; four-foot column, 10 per cent DDP on firebrick; 100° C.

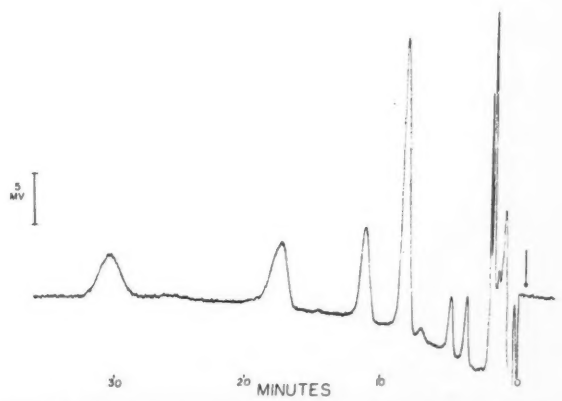


Figure 3. Twenty-five cc banana volatiles eluted from enrichment column. Conditions as in Figure 2.

or different substrates, be long or short, simple or complex. Partitioned columns can be used, too, so that short sections can be examined individually by elution onto separation columns best designed for the volatiles they contain. Complex mixtures containing a wide range of volatiles are well suited for this technique. One-inch lengths of column packing separated by glass wool plugs are usually adequate.

For most problems, the choice of pre-column rests between a long column at room temperature and a short one at some lower temperature. Both have their uses. In either case, if the air sample contains a constant concentration of each volatile, the column will be charged in overlapping zones for each constituent.

Ideally, a thermal elution gradient (as in thermochromatography) passed backward along the enrichment column will drive off all absorbed components together and deliver them to the separation column in concentrated form. Considerable effort along these lines has not been very rewarding, since a very large number of variables are found to be involved. However, some promise is shown in cases where a rigorous analytical problem demands the use of a coated capillary as the separation column. For most purposes, the simpler techniques work equally well, and in fact often work better the simpler they are.

For example, the application of the enrichment column technique might well be illustrated by its use in the analysis of volatiles from above crushed banana.

A small U-tube containing about two inches of a regular 10 per cent didecylphthalate (DDP) column packing (with a history of heating to drive off all volatile material) was sealed at one end with a rubber septum. Five 5-cc portions of vapor from a flask containing crushed bananas were transferred by syringe and hypodermic needle to the U-tube, expelling the syringe content gently each time and noting whether banana flavor was "breaking through" this pre-column. The U-tube was then reversed, connected in series with a DDP column (at 50°C), and placed in a small hot water bath on top of the machine. The connection was as short as possible. After a few minutes to ensure that the U-tube was heated thoroughly, the argon flow was re-established and a gas chromatographic run made. The result obtained directly from a 5-cc sample of vapor (Figure 2) can be compared with that obtained by this technique (Figure 3).

Several peaks, barely distinguishable above baseline noise in Figure 2, are clearly evident in Figure 3. It can also be seen that the less volatile (strictly, the more strongly absorbed) components of banana flavor are now much more prominent in relation to the earlier eluted components. The balance could probably be preserved by using a much longer pre-column or by cooling the short one used. However, the longer the column, the greater will be the criticality of reversing the pre-column. This is done so that the components that moved farthest along the enrichment column will be the first to "reverse" themselves. All the absorbed material will then tend to be eluted at the same time in a concentrate containing all components in their original relative concentrations.

Radium, strontium 90, and tritium have been used as the ionizing sources in this type of experiment with argon as the carrier gas. The detector was run at 1750 or 2000 volts. Exact conditions varied from day to day, mainly according to the particular column in use and its previous history. The detector was usually run at the highest possible sensitivity consistent with the column condition. Column breakdown and bleeding are points to be watched very carefully, since they represent the factors most detrimental to satisfactory results at highest sensitivity.

In the past, studies of breath volatiles made it clear that the organic level was extremely low for most people and that large samples were required. Sample sizes up to several liters were examined but, since enrichment columns, like any other chromatographic columns, are developed by containued passage of gas (carrier or sample-bearing), there is an upper limit to sample size for any given set of conditions, else components are eluted from the enrichment column as fast as they are added. In this event, the gross composition of the volatiles retained for examination changes drastically until the capacity of the enrichment column for each component has been satisfied. At this stage, the sample on the column bears only a qualitative relation to the components of the volatiles being sampled and a quantitative relation to the solubility of each component in the liquid substrate used for coating the pre-column.

Such theoretical considerations, and the practical ones of breath sampling, led to the adoption of 400 cc as the standard breath volume to be sampled. Since the separation column was best operated at room temperature, the enrichment column was normally used at dry ice temperatures. The total sample was collected and, in the series described here, no attempt to eliminate water was made. Previous experiments had clearly indicated the changes in apparent composition brought about by pre-trapping devices for water. The water content of breath is of course, extremely high, but use is made here of the argon detector's insensitivity to water and of columns chosen to retard water for convenient times. The amount of water in breath is so large that a negative peak is sometimes obtained, although this is not the case with normal samples of volatiles from foodstuffs. This negative peak is caused by the interference of water (quenching effect) in the ionization process. Water also reduces the sensitivity of the detector to any organices eluted at the same time as water, and allowance must be made for this in interpretation of the results.

Transfer of volatiles frcm enrichment column to

(*Continued on page 105*)

Packaging and Selling

Ceragraphic Company's one-color multitone printing technique, which permits halftone effects that can be controlled even in long runs for decorative containers. Backgrounds can be clear, sprayed, or Ceracoated for an opaque side with transparent shoulder.

Aerosol Perfumes are on the move!

Sales up 518% in 1958 over 1955!

Reason: the magic touch of aerosol packaging makes perfumes and colognes easier to apply . . . eliminates loss from evaporation, spillage, leakage and breakage.

Aerosol perfumes and colognes are moving fast! Last year, sales shot up to 28 million units—a 518% increase over the 5.4 million units sold as recently as 1955.* And the trend has just begun. The push-button convenience of modern pressure packaged perfumes and colognes . . . the elimination of loss from evaporation, spillage, and breakage . . . have proved tremendous sales advantages. An aerosol perfume won't leak. Every woman can now *safely* carry perfume in her purse . . . have it with her wherever she goes.

If you're interested in aerosol perfumes and colognes, follow the course of so many successful aerosol marketers—take advantage of the special services General Chemical puts at your disposal.

How General Chemical can help you

As one of America's leading producers of aerosol propellants, General Chemical can give you valuable technical information which will help you determine the proper aerosol propellant compatible with your perfume or cologne. We will supply you with the latest aerosol market information. We can show you promising new types of aerosol formulations developed in our laboratories. And we can give you information on how contract fillers can help you, from test marketing right through to full commercial production. The fact is, through the use of contract fillers you can get into aerosols quickly and efficiently—*without any outlay on your part for plant, special equipment or personnel!*

Why not take advantage of these valuable services from General Chemical *now?* Call or write us today for a confidential discussion of your requirements.

*Estimated by Market Surveys Department, General Chemical Division, Allied Chemical Corporation

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aerosol propellants

Putting the "push" in America's finest aerosols

Allied Chemical

GENERAL CHEMICAL DIVISION
40 Rector Street, New York 6, N.Y.

AN EVERY-WHICH-WAY AEROSOL

New conveniences usually leave new complications in their wake, and the aerosol is no exception. Its disadvantage has been that it will spray from one angle only. Moreover, if the nozzle is pressed several times at an off angle, enough gas may escape to leave a dead package—one without sufficient gas to drive out the product left in the container. What many a frustrated aerosol user has longed for is an aerosol with a valve that would operate whether the container was right side up, upside down, or at any angle.

The new Gulf SA (for Sprays Anyway) valves

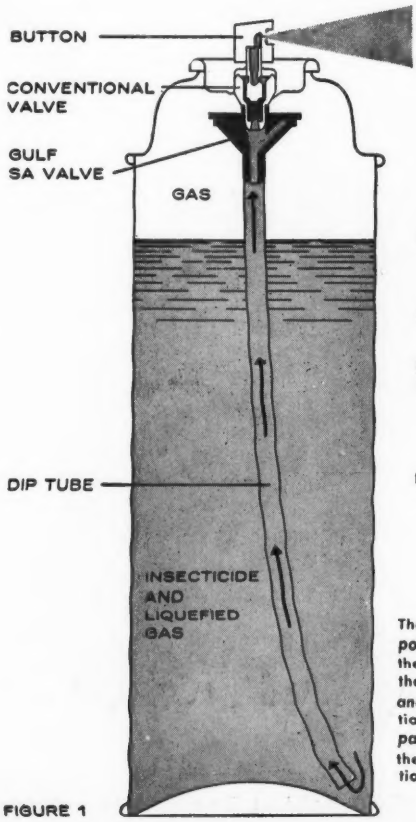


FIGURE 1

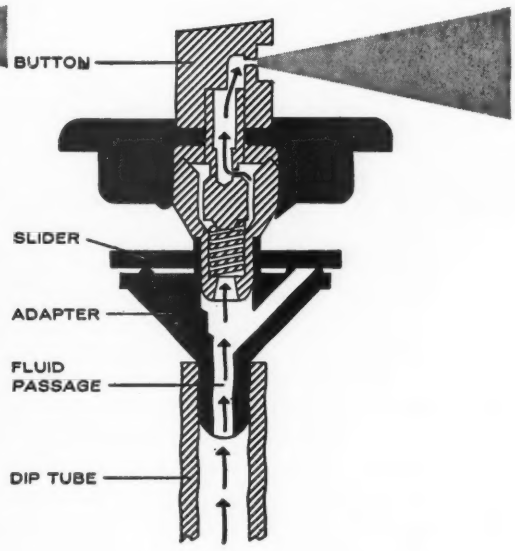


FIGURE 2

The new Gulf SA valve functions in both an upright and an inverted position. In Figure 1, with the bomb right side up, the open end of the dip tube is immersed in the insecticide and liquified gas. When the button is pressed, gas pressure forces the liquid up the dip tube and out into the air. In the close-up view in Figure 2, the slider portion of the valve is resting against the opening to the "auxiliary" passageway in the adapter, sealing it off, so that the liquid flows up the dip tube, as it normally would. The Gulf SA valve goes into action when the "bomb" is inverted, as is shown in Figure 4, (page 53).

*Seamless Crown Spra-Tainers**

make profitable new products possible

For years, antiseptic pre-tape dressing for athletes was a needed item and a good idea—but impractical. Crown's seamless Spra-Tainer makes it possible, holding the volatile formula under high pressure without evaporation or deterioration and permitting easy, economical application. Crown, the outstanding pioneer and world's largest manufacturer of aerosol cans, can give you the benefit of wide experience in the field. May we have the opportunity to discuss or provide you with more details?

**Only Crown manufactures both fabricated and seamless Spra-Tainer aerosol containers.*

CROWN

for cans · crowns · closures · machinery

CROWN CORK & SEAL COMPANY, INC., 9300 Ashton Road, Philadelphia 36, Pa.

will do just that. Developed in the Entomology Laboratory at the Gulf Research Center, Harmarville, Penna., the new series of valves makes it possible to use an aerosol in any position.

The Gulf Research and Development Company now owns broad patents covering the use of such valves in this country, and has been granted or has applied for similar patents in 22 foreign countries. Gulf is licensing the patents to valve manufacturers.

Licensing agreements have already been signed with Seaquist Manufacturing Corporation of Cary, Illinois, which is now producing one SA valve for Gulf Ant Roach Bombs.

The valve can be adapted to and used in combination with some conventional aerosol valves. As the figures show, the SA valve essentially provides a by-pass to the dip tube when the can is inverted. If an aerosol "bomb" equipped with this valve arrangement is operated in an upright position, it functions exactly as any regular upright aerosol. The by-pass is closed, preventing the loss of gas, and the liquid is forced by the gas pressure up the dip tube and into the air. But when this container is turned over, the by-pass valve opens, converting the "bomb" into an inverted aerosol. The liquid no longer travels through the dip tube, but moves out through the new opening. Right side up or upside down, the product continues to flow as long as the button is pressed.

Seaquist expects to begin production soon of similar valves for use on many types of aerosols, among them, hair sprays, deodorants, foot sprays, pharmaceuticals, and suntan lotions.

By overcoming one of the aerosol's principal shortcomings, the SA valves will enhance its appeal.

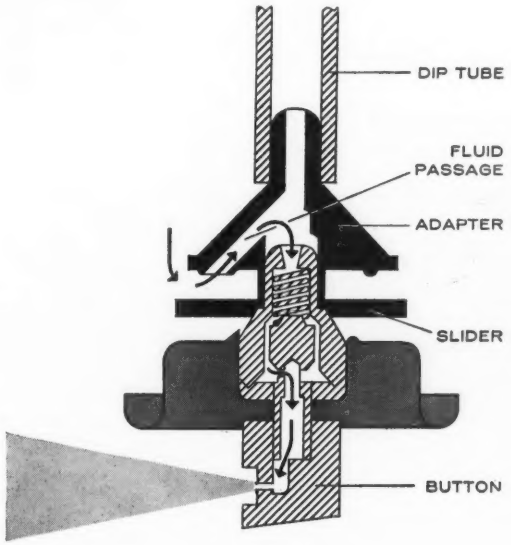


FIGURE 3

With the dip tube no longer immersed, only gas would be released if you pressed the button on a conventional container aerosol. But, as Figure 3 indicates, when a Gulf SA-valve equipped can is turned upside down, the slider falls away from the adapter opening, which is immersed in liquid, so that the liquid now flows through ths passageway, by-passing the dip tube, and the stream of spray continues without any interruption.

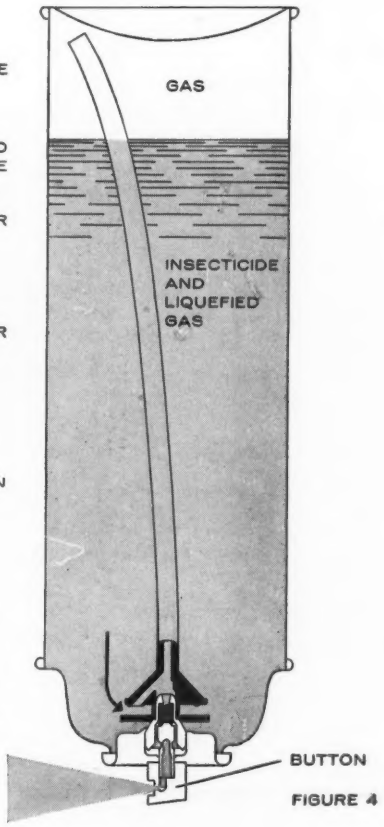
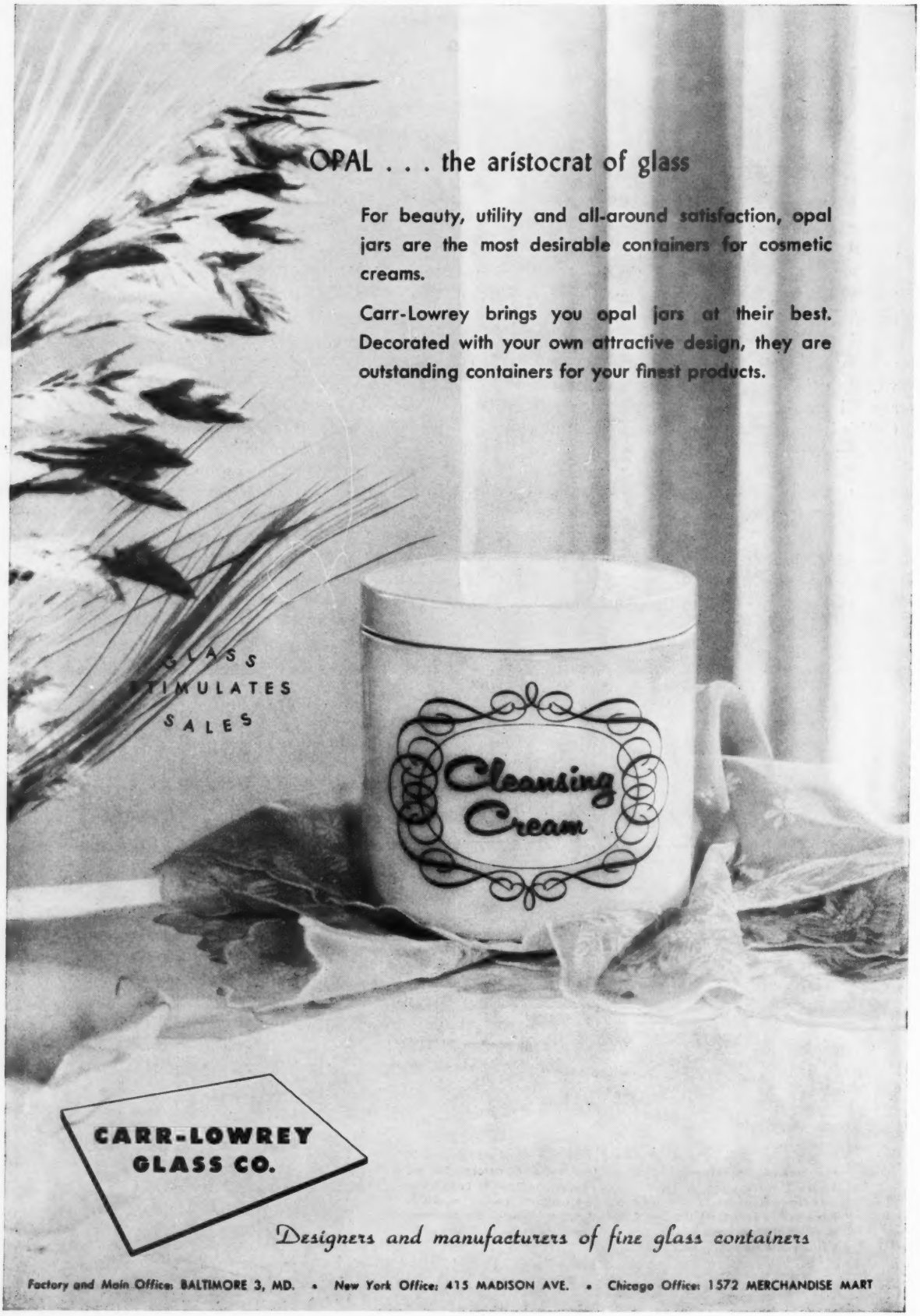


FIGURE 4


OPAL . . . the aristocrat of glass
For beauty, utility and all-around satisfaction, opal jars are the most desirable containers for cosmetic creams.
Carr-Lowrey brings you opal jars at their best. Decorated with your own attractive design, they are outstanding containers for your finest products.
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Cleansing Cream
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Packaging and Selling

At this particular time when nearly everybody, and particularly editors and public speakers, are talking with the utmost confidence about the "golden '60's," we have decided that it might be more interesting and even more profitable to talk a little bit about the golden '20's, '30's, '40's and '50's.

This happy thought was inspired by a fortunate accident whereby we stumbled upon an ancient volume in our library. This book turned out to be the *Fourteenth Annual Meeting of The Manufacturing Perfumers' Association of the United States*, which took place in the year 1908.

It occurred to us that, in the year 1908 at this annual meeting, there were undoubtedly men filled with optimism at the business prospects of the coming years and, undoubtedly, there were men who were held down by caution or harassed by uncertainty. We ourselves know, upon looking back over these 50 years, about the truly fantastic growth of our industry, and that the people at this convention were really headed for a golden period.

However, let us take a look at what the president had to say at this meeting of the trade association of our industry on that April day in 1908 at the Down Town Club in New York City.

"The country has passed a decade of unbroken growth of prosperity, culminating in the year 1907 which broke all records, though in its later months we had all kinds of times.

"Along with congested wealth came graft, corruption, organized vulgar greed and false valuations by certain cliques of selfish, unworthy men.

"The first rumbling of an approaching storm was the Lawson exposure of the chicanery of insurance, financial and commercial wrongdoers; though this had apparently passed from alarm.

"Our people have however awakened to the folly of excessive expansion; to the need of better currency laws; to the effects of certain economic laws. The public conscience has been quickened and we see the fruition of cleaner financial and commercial life; of higher public estimates of individual character and consequently of collective manhood; a gain for the American name not measured by the dollar.

"We are optimists and confidently turn to brighter days ahead with faith in our enormous resources and the pluck, enterprise and indomitable will of our people who will not be kept down long.

"We can justly claim a decided healthy advance in the status of the industry in general in 1907; in higher conceptions and in our own estimate of the value of our labor, skill and experience, and in the consequent better rewards, all of which will be felt from now on.

"The advance in prices to cover increased costs of production has been pretty generally accomplished but not by concerted agreement on any given schedule.

"Each of the houses which advanced its prices considered the matter from its own standpoint and advanced such items as it deemed best, and many have reported their satisfaction in the outcome."

All of us who are able to look backward over this whole span of years or at least a part of it, know that, with a few interruptions, it was in truth a period of substantial and dynamic growth, for both our country and our industry.

For this reason, should we now be any less optimistic or to any degree less confident that the years that lie ahead will not be as dynamic and beneficial and overflowing as the years that followed that 1908 industry meeting? Isn't it possible for us to repeat nearly word for word the speech of this trade association president made so many years ago?

Twenty-two active company members were represented at that association meeting. For the many people in the trade who will see this article whose memory goes back some of this distance, we list the names of the active members of the perfumers' association in attendance in 1908.

If anyone wanted conclusive proof that the cosmetic industry is dynamic, uncertain and hazardous, he would only have to look at this list of representative companies of only 50 years ago. Old timers will recognize many. They will recognize, in the case of a few, that, although the names are changed, the lines of inheritance can be traced. It is, however, a sad fact that the high rate of mortality of cosmetic companies is fully evident here.

ACTIVE MEMBERS PRESENT

Babcock, A. P. ..... New York
Represented by Lewis E. K. White

Bradley & Son, D. R. ..... New York
Represented by Wm. A. Bradley

Calisher & Co. ..... New York
Rpresented by A. B. Calisher

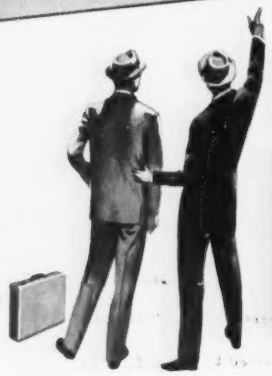
Colgate & Co. ..... New York
Represented by Gilbert Colgate

Elsinore Perfume Co. ..... Poughkeepsie, N. Y.
Represented by C. Van Skiver

Goetting Co. ..... New York
Represented by David H. McConnell and Alexander D. Henderson

Hilbert & Co., A. J., Inc. ..... Milwaukee
Represented by A. J. Hilbert

Hudnut's Pharmacy, R. ..... New York
Represented by Arthur E. Jenks



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UNION CARBIDE CHEMICALS COMPANY
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and Selling

Ingram & Co., F. F. ..... Detroit
Represented by Frederick F. Ingram
Jennings Manufacturing Co. ..... Grand Rapids
Represented by C. W. Jennings
Ladd & Coffin, Lundborg's Perfumes ..... New York
Represented by Benj. I. Mott
Lazell, Dalley & Co. ..... New York
Represented by E. M. Dalley and F. N. Carpenter
Macy & Co., R. H. and Abraham & Strauss ..... New York
Represented by Joseph A. Brohel
Mellier Co., Perfumer ..... St. Louis
Represented by G. D. Merner
Michigan Drug Co., The ..... Detroit
Represented by James E. Davis
Ricksecker Co., The Theo. ..... New York
Represented by Theo. Ricksecker and Frank B. Marsh
Royce Co., The Abner ..... Cleveland
Represented by S. S. West and W. H. Hyde
Selick, C. H. ..... New York
Represented by Geo. Selick
Smith, Kline & French Co., The ..... Philadelphia
Represented by J. Clifton Buck
Spiehler, Adolph ..... Rochester
Represented by A. Spiehler and A. M. Spiehler
Stearns & Co., Frederick ..... Detroit
Represented by Willard Ohliger
Williams Co., The, Chemists ..... Rochester
Represented by A. F. O'Connor

As might have been expected, there was a large attendance of associate members, that is, the suppliers of the trade at that time, and they substantially outnumbered the active members.

ASSOCIATE MEMBERS PRESENT

American Can Co. ..... New York
Represented by G. A. Fisher and L. J. Freundt
Bomeisler, Carl ..... New York
Represented by C. Bomeisler
Brass Goods Manufacturing Co. ..... Brooklyn
Represented by Frank S. Hyatt
Bruno-Court ..... Grasse, France
Represented by T. H. Grossmith
Buedingen Box and Label Co. ..... New York
Represented by Carl Buedingen
Bush & Co., W. J., Inc. ..... New York
Represented by Burton T. Bush
Carr-Lowrey Glass Co. ..... Baltimore
Represented by Samuel J. Carr, Wm. W. Lowrey, Wm. Orem, J. Krammer
Chemical Works Co., Ltd. ..... New York
Represented by Donald Wilson
Chiris, Antoine ..... Grasse, France
Represented by C. G. Euler and W. B. Robeson
Chuit, Naef & Co. ..... Geneva, Switzerland
Represented by W. G. Ungerer
DuPont, Justin ..... Argenteuil (S.&O.), France
Represented by Edwin H. Burr
Forsman Co., Chas. H. ..... New York
Represented by Chas. H. Forsman
Fox & Sons, H. C., Inc. ..... Philadelphia
Represented by Geo. N. Hanna
Fritzsche Brothers ..... New York
Represented by F. E. Watermeyer
Grossmith, T. H. ..... New York
Represented by T. H. Grossmith
Heine & Co. ..... New York
Represented by P. Schulze Berge, Jr.
Henderson Lithographing Co., The ..... Cincinnati
Represented by Con Zech
Hutchinson, D. W. ..... New York
Represented by D. W. Hutchinson
Jeancard Fils & Co. ..... Cannes (A.M.), France
Represented by W. G. Ungerer
Lueders & Co., Geo. ..... New York
Represented by Edw. V. Killeen
Magnus, Mabee & Reynard, Inc. ..... New York
Represented by P. C. Magnus
Maschmeyer, Aug., Jr. ..... Amsterdam, Holland
Represented by L. A. Van Dyk
National Aniline & Chemical Co. ..... New York
Represented by Chas. H. Alker
Ottmann Lithographing Co., J. ..... New York
Represented by Messrs. Bonnier & Miller
Rockhill & Vietor ..... New York
Represented by Clayton Rockhill and Carl L. Vietor
Roure-Bertrand Fils ..... Grasse (A.M.), France
Represented by Edwin H. Burr
Shaw & Co., M. A., Inc. ..... New York
Represented by M. A. Shaw
Shipkoff & Co. ..... Kazanlik, Bulgaria
Represented by C. G. Euler and W. B. Robeson
Swindell Brothers ..... Baltimore
Represented by H. O. Brawner and W. E. Swindell
Synfleur Scientific Laboratories ..... Monticello, N. Y.
Represented by Alois von Isakovics
Thompson & Norris Co., The ..... Brooklyn
Represented by Louis E. Ellrodt
Ungerer & Co., Inc. ..... New York
Represented by W. G. Ungerer and F. H. Ungerer
Van Dyk & Co. ..... New York
Represented by L. A. Van Dyk and Samuel Iserman
Waterbury Paper Box Co., The ..... Waterbury, Conn.
Represented by F. L. Butz
Whitall, Tatum Co. ..... New York
Represented by W. F. Rowe
Whittaker, W. H. ..... New York
Represented by S. H. Clark
Young Co., Richard ..... New York
Represented by James M. Montgomery

What is also extremely significant is the evidence here of the stability of supply companies as compared to active members. A large majority of these suppliers are still in business although in some cases there has been a change of name, for instance, from Chuit, Naef & Co. of Geneva, Switzerland, to the present Firmenich Incorporated, and in a few other cases the identity is still alive, although mergers have removed them from the ranks of independent companies. It is still true, however, that the stability among suppliers outranks that of the active members by a startling margin.

Over the years, dentifrices have taken almost every conceivable shape and form of package and dispenser that the creative imagination of this industry could think of. We do not believe that a tablet dentifrice is new by any means, but at least a new one is coming on the market. This is a small tablet made by Consolidated Labs., Inc., which, when crushed in the mouth, forms an activating foam which can be swished around in the mouth and expelled. It is said to do a thorough cleaning job.

There seems to be considerable bubbling, energy, and enthusiasm nowadays in the plastic container field. Ever since that big jump to a plastic container by a leading detergent manufacturer, which more or less put the rest of his particular branch of the industry on its ear, there have been signs everywhere of accelerated activity and enthusiasm.

One current opinion is that plastic bottle makers estimate shipments of about 650 million containers this year and will reach about one billion annually sometime in 1960.

A leading chemical executive whose company is heavily involved in making the raw materials for these containers commented that the trend is pretty well spelled out and is moving rapidly.

According to a recent court statement by a major

container manufacturer, "The basic reasons for the swing to plastic bottles include:

(1) Economy. Unbreakable, non-corrosive plastic containers reduce spoilage and cut down packaging costs by permitting lighter cartons and unit dividers. Light weight also reduces freight costs.

(2) Flexibility. Plastic containers can be molded in any shape or color to give every product its own distinctive design and merchandising appeal.

(3) Price. While plastic bottles still cost more than tin cans and glass jars in most sizes, prices are headed downward through increased sales volume, more efficient production machinery and methods, and lower labor costs in the plastics industry than in competing industries."

The people in this trade who are now selling to the supermarket or who have dreams and ambitions in that direction will find profitable reading in a new book, "How to Sell the Supermarkets," written for non-food manufacturers and distributors.

As a spot review of this book, here are some comments and quotes.

As everyone knows, the supermarket today has no time for a product that is not pre-sold and that will not sell on display without any sales help from the store. As this book says under the chapter, Knowing Your Customer, this is particularly true of health and beauty products. "Particularly significant is that non-food items were responsible for a far higher than average percentage of impulse buying—90 per cent. Or, reversing the figure, only 10 per cent of non-food purchases made in the supermarket were planned before the shopper entered the market.

"These factors of impulse buying that arise from the self-service principle incorporated in the supermarket must be kept in mind by the non-food manufacturer or distributor."

Such considerations, the author concludes, make it necessary that the product sell on sight; that the product or its packaging bring an immediate response from the shopper; that uses be apparent and advantages clearly identified.

According to Dun & Bradstreet figures, the grocery store gross margin is 15.9 per cent as compared to 32.1 per cent for department stores and 34.6 per cent of drug stores. Also, the figures for inventory turnover for grocery stores is 13.6 per cent, for department stores 2.7 per cent, and for drug stores 4.0 per cent. Obviously this high average turnover in the grocery store has a potent influence on the author's thinking. He remarks, "Therefore, the non-foods seller must be able to offer expectation of reasonably high turnover to occupy space in a supermarket." In this connection Myer B. Marcus, executive vice-president of Food Fair Stores is quoted: " 'We sell a pre-sold product. Department stores sell. We distribute. There is a great difference.' "

Typical sales per customer in the supermarket is $4.73. According to the author, this figure indicates that a low-priced item has a much better chance of gaining shelf space and of making a sale in the average supermarket. Typical sales per square foot of selling area totaled $3.77.

Another interesting comment: "The average supermarket thrives on a privilege it is well aware of: that the customer does not expect it to provide a complete line in the various types of non-food merchandise it carries.

"A comparison with so-called regular retail channels of distribution of this merchandise makes this clear. A shopper in a department store or a specialty store will be very dissatisfied if that store doesn't have the desired color and style of a wanted item. She believes part of such a store's function is to have a complete variety of the item so that she may select from the wide assortment. Perhaps that retailer does 80 per cent of his business in only 20 per cent of his offerings, as is often the case with a department store section or a specialty shop. Nevertheless, he must necessarily carry the full range of merchandise, very slow-movers along with rapid-turnover items, or he will lose his patronage.

"Not so in a supermarket. The shopper knows that the non-food line is limited. She looks upon the section as a service over and beyond the normal offerings of the food store and does not demand a full assortment from which to choose. This is a very real advanage for the average supermarket. It means that in the non-food field, the supermarket can limit itself to hot items that will move fast."

Here are the general patterns observed by the author to be the basic requirements if a product is to sell on a continual basis in the supermarket.

(1) A product should offer a good margin of profit to the supermarket.

(2) The product must be something that can be sold frequently and to a large percentage of the people who shop in the supermarket.

(3) The product must lend itself to impulse buying.

(4) The size of the product is important. Space is limited, therefore an item should not be too bulky if it is to be sold in the average market.

(5) The product should be something that the customer might be willing to buy in a supermarket. The author states, "It must be accepted that prestige plays a significant part in many consumer purchases and the supermarket should not be expected to compete on this basis.")

Another summary of the basis for selection of a product by a supermarket is given by the chairman of the board of Stop & Shop.

(1) The item should lend itself to self-service selling and display. Our customers expect to serve themselves in our stores. The item should lend itself to good packaging so it can sell itself.

(2) The item should have a high repeat factor.

It should be a product which is rapidly used up. It should have a mass appeal. It should give us a high turnover.

(3) The item should fit into the logistics of our merchandising operations, that is, we should be able to handle it efficiently with existing facilities and personnel.

(4) The item should ordinarily be bought by women. Over 75 per cent of our customers are women.

(5) The item should represent a small unit of sales, be easy to carry out of the store and yet large enough to discourage excessive theft.

(6) The item should be staple with a minimum variety of colors, sizes and styles. We do not want fashion merchandise.

(7) Last but not least, the item should yield a better than average profit.

This industry in its dealings with retail customers is not used to the committee form of buying. This, however, is becoming increasingly important as a supermarket policy, which makes is so important to understand thoroughly the fundamental qualities that a committee would look for in considering a new product.

Supermarket operators are probably more conscious of packaging than any other retailer. As the author states, "The self-service technique of the supermarket places a high premium on packaging. It is most important to think of the package in the self-service store as the principal (and perhaps the only) salesman for the item."

Here again are some suggestions on packaging from the executive of Stop & Shop, as quoted in this book.

"A. Bear in mind that a package should look the way the customer expects it to look. For example, I think that a beer bottle designed so that it looks like a hair-tonic or shampoo bottle will not sell so well. A cleanser package that is over-refined in design and looks like a container for cosmetic dusting powder may not sell well.

"B. Remember that within reason a self-service package should appear as large as possible, to give the impression of maximum quality for the money—without, of course, being deceptive. It should have what we call 'shelf value.'

"C. Do not allow transparent containers to be printed over so large an area that it is hard to see the contents.

"D. Make the package easy to read. This seems obvious, but many packages are being made today with labels that are hard for the customer to read without taking the package off the shelf for closer inspection.

"E. Give your package an up-to-date look.

"F. Use good pictures—or none at all.

"G. Make the package easy to open and easy to close.

"H. Build your package size to fit a wanted price range."

The author makes it a very strong point, that a manufacturer's number should be inconspicuous and in no possible way cause confusion with the price mark. He adds, "The requirements for a package have become very vital."

Since packaging is such an essential in this part of the retail field, and since so much intensive and intelligent research has gone into packaging, we will take the space to add another list of rules, this time by a leading rack jobber for health and beauty aids. He lists the following requirements and suggestions from the point of view of backroom operations and supermarkets.

(1) All shipping cases should be marked, "Open here for price marking." All shipping cases should be so arranged that, on being opened all price-marking surfaces are immediately available.

(2) All shipping cases in which glue might stick either to the individual item or the shelf package should contain a slip sheet.

(3) All cartons in which there is a danger of cutting into the merchandise upon opening should have a corrugated liner.

(4) Shelf packs contained in shipping cases should be arranged to oviate the necessity of dumping them out of the cases in order to price mark.

(5) All shelf packs should be designed to make unnecessary any cutting of the paper wraps or removing tops of shelf packs.

(6) All items should have a white spot at least the size of a nickel, wherever possible, for price marking.

(7) Generally speaking, with the exception of tooth pastes, shelf packs of six units are desirable.

(8) Wherever possible, if we cannot obtain open-top shelf packs, particularly where we are dealing with paper-wrapped shelf packs, we would like to die-cut holes the size of a quarter above a blank space on the carton tops underneath, to permit easy price marking.

(9) All four panels of shipping cases should show the item, the size, and the quantity in the case.

(10) No carton should weigh more than 40 pounds for ease of handling in the warehouse.

(11) Bottle caps, jar caps, and similar closures should be smooth, flat, and have no embossing or fluting on top. All caps should be light or pastel in color, so price marking will be legible.

These were the standards for shipping cases. This jobber then goes on to classify the favorable requirements of the package very much along the lines of the Stop & Shop requirements.

This book, which certainly should be read by everyone at all interested in the supermarket, is written by Julian H. Handler, the editor of *Super Market News* and may be obtained from the Fairchild Publications, Inc., New York City.

you have to manufacture
Quality
into a product
At Newman-Green we believe in the axiom of all true craftsmen. Quality cannot be inspected into a piece—it has to be built into the piece.
The aerosol manufacturing and sales policy based on product quality, service and honesty will always provide you with the best buy. This is just as true on the smallest orders as it is on the largest orders. Newman-Green customers are assured of this fine craftsmanship because our first concern is to provide you with the best product quality possible for the money spent. Call your Newman-Green representative today.

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News in Packaging . . .

Glass Containers To Break Record in Sixties

Glass container manufacturers will produce an all-time record of 23 billion bottles and jars in 1960, according to Carl R. Megowen, president of Owens-Illinois Glass Company. The record, an increase of 6 per cent over 1959 production, will be the forerunner in a series, as manufacturers develop lighter, stronger, more economical, and more convenient containers of glass. Owens-Illinois is demonstrating its faith in this future by investments in new and improved facilities, a new plant in Bogota, Columbia and another in New Orleans, and other packaging plants, Mr. Megowen said.

Continental's Plastic Container Manufacturing Fully Automated

William M. Cameron, executive vice-president in charge of Continental Can Company's Glass and Plastics Operations Group, has announced that, with the prospect of packaging high-volume items such as detergents, his company has developed a fully automated, high-speed line of equipment for both bottle blowing and printing, which will make obsolete the industry's present fabricating equipment. Operating costs on the new equipment will be lower and, as volume increases, plastic resin producers can reduce their costs as well. Industry shipments may hit one billion in the year 1960, Mr. Cameron said.

Tauentzien, spray cologne by Otto Muller, G.m.b.H., western sector, Berlin, propelled by carbon dioxide, which is made possible by Risdon's three-phase, mechanical break-up Micro-Mist valve and actuator, manufactured by Solofrene Srl, Italian licensee.

Max Factor's new self-selection eye makeup packages and display unit, which is designed for use on the Max Factor eye make-up cabinet featuring complete shade chart. Fifteen products are to be so packaged.

Rubbing alcohol packaged in an attractive pint-sized plastic container, an innovation by McKesson & Robbins, Inc., which has a metal cap and an easy-to-pour lip, to avoid the usual wasting of the product.

Dorothy Gray's Sheer Velvet Hair Spray package shows use of print runs with alternate Spanish labeling and instructions tied with domestic runs and plates simply substituted, for the South American market.

Aerosol Packaging Awards for 1959 made by the Chemical Specialties Manufacturers Association, in 11 categories, left to right: medicinal-pharmaceutical—Burn Spray, Rexall Drug Co.; shave products—Shaving Foam, Yardley of London, Inc.; room deodorants—Wizard, American Home Products Corp.; insecticides—Target, Rexall Drug Co.; paints, coatings—Gold Enamel Spray, Craftint Manufacturing Co.; foods—Qwip, Avoset Co.; industrial products—Rust Solvent, Plasti-Kote, Inc.; household products—Charcoal Lighter, Lenk Manufacturing Co.; hair preparations—Spray and Wave, Cort Cosmetics, Inc.; personal products—Tan 'n Ban, Standard Oil Co. (Ohio); perfumes, etc.—Oh La La Eau de Parfum, Parfum Ciro Inc. Awards were made in mid-December.

CSMA Aerosol Awards

The 1959 Aerosol Packaging Awards given annually in each of eleven product categories for the best design were presented this year at the annual meeting of the Chemical Specialties Manufacturers Association, Inc., held in December at the Mayflower Hotel, Washington, D. C. The winners, shown at the left, were judged by a panel of six: Mrs. F. C. Poppe, New York housewife, Mrs. Charlotte Montgomery, associate editor of *Good Housekeeping Magazine*, Charles R. Beall, vice-president, trade promotion, McKesson & Robbins, Inc., William Pahlmann, interior designer and president, William Pahlmann Associates, Inc., Walter F. Kohn, marketing consultant, and Lawrence Drake, editor, Grocery Edition, *Chain Store Age*.

The judges examined 269 entries this year. The Grand Award went to Qwip, a dessert topping.

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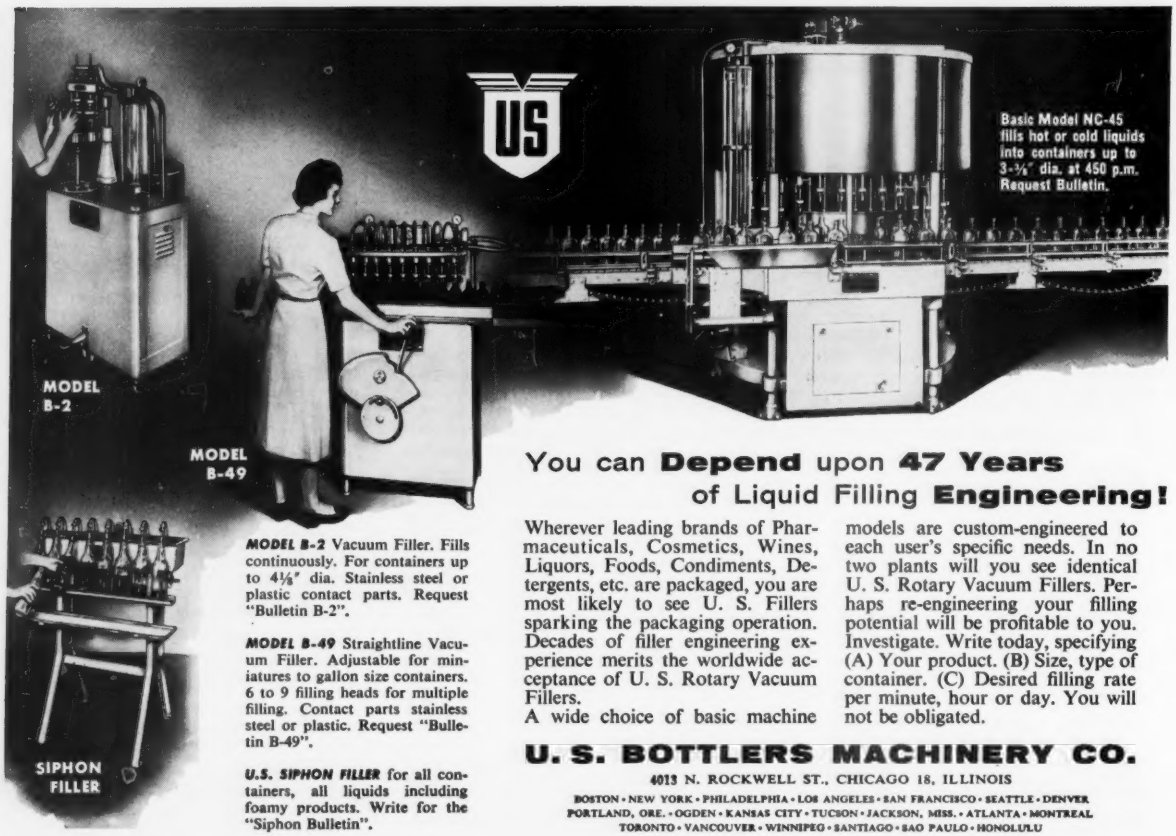
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NEWS and VIEWS

BY TED KLEIN PUBLIC RELATIONS DIRECTOR*

Good Deeds

Many significant facts about the pharmaceutical industry have not been brought to bear just now, when the public is hearing everything bad about our business. A cardinal rule in public relations is that you first must do something good; then, and only then, can you make the public aware of this deed.

We have a long history of good deeds, but, with our equally long history of not telling anyone about them, it would be difficult to do so now. Moreover, our critics might say we were obviously so affected by their investigation that we were driven to respond to their criticism, but that, having no refutation, we could answer only by statements of our services.

Our industry's reputation has suffered greatly at the hands of Senator Kefauver. Headlines have exposed and censured our most intimate family secrets. Consequently, I feel some comment may well be expected from us.

There has been very little in the papers about the important day-to-day contributions of the pharmaceutical industry. Until now, only trade publications have discussed the giant strides our industry has made in promoting the health of our citizens. There have been relatively few network TV shows, movies, or national advertising campaigns to that end, although recently some firms have emphasized the role of research, the training physicians must have, and the satisfaction gained from a career in medicine.

Who Knows The Story?

How many of the 50 million or so Americans who read a daily newspaper really know that, while cortisone is still expensive, it cost the developer of the drug almost $22 million to make it? Does your next-door neighbor know that only the pharmaceutical industry as it is now set up could have developed the Salk vaccine? Not to depreciate Dr. Salk's magnificent contribution, it must be pointed out that the manufacturers of vaccine, not Dr. Salk, took the financial risk in producing the vaccine.

Do our science teachers know what it takes to supply the pharmaceutical needs of a country at war? Do our youngsters know how the industry worked day and night during the forties to develop penicillin in quantities large enough to save millions? Or do they know only that Sir Alexander Fleming first found it, and, after 20 years or so, Sir Howard Florey and Dr. Ernest Chain rediscovered it.

Sure, those of us in the industry know that last year we spent $194 million for research, but does the public? Does the editor of the weekly newspaper in your town know that of the total $95.57 spent last year for medical care by each citizen, drugs accounted for only $19.02, and that hospitals got $25.19, physicians, $22.76 and dentists, $9.76?

Is it common knowledge that the industry's continuing development of new drugs is largely responsible for the 10-year increase in life span since 1937?

Many of the complaints directed at the industry via Senator Kefauver, come from those who have retired, who claimed they were on a financial rack because of the price of the drugs they needed. But many of these same people are alive today because of the drugs that they feel cost too much. No one asked Senator Kefauver if he thought that the life of a person was worth the amount that antibiotics cost to save that life.

This is a time when eveyone will be coming up with answers as to what we should do to counter the unfavorable public opinion generated by the Washington hearings. Probably no one is wise enough to know them all. But, for the record, here are a few suggestions from this corner.

(1) Let's have a series of network TV programs on the industry and its contributions to the public welfare—not on the physician, but on the drugs with which we have been providing him.

(2) How about an intensive campaign in the schools outlining the role the pharmaceutical industry plays in our health picture—from the fact that the industry spends more on research then any other industry, to the career opportunities continually available.

(3) Let's make sure that our elected representatives in legislatures—city, county, state, and national—see the inside of our plants, our quality control, our research labs, so they will know what it takes to make drugs.

(4) When we are accused of making over 7000 per cent profit on a drug, let's try to get a statement in the press explaining how such figures distort the truth.

(5) When we talk to financial underwriters about the probable success of our companies' activities, let us remember that the same information we give financial writers about our profit picture will eventually find its way into public print. This means we should qualify our information, instead of trusting to luck that the whole story gets told.

(6) Are we sure that everyone connected with the industry knows our position and the facts of the matter, in the current controversy? Each of us should be informed on what our position is, and then inform all who work with and for us.

I think the American public has demonstrated that it can face facts and then make decisions that are eventually for the common good. There is grave talk these days about restrictive legislation that will shackle our industry, limiting our profits as happened with the public utilities. I, for one, am not sure that being cast in the role of a utility would be so bad. Consider A. T. and T. and Con Edison. But let's avoid it if we can.

Lastly, two actions might subvert future restrictive legislation: the industry could sell its drugs at cost to the aged, the poor, and the chronically ill (after all, we make more by keeping people well than we do by helping the sick get well); and we could direct as much money as is needed to support our present health and welfare system, and thereby strengthen it wherever it is weak.

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Patent thoughts and trends

BY THOMAS CIFELLI, JR., PATENT ATTORNEY*

Listerine: A Multimillion-Dollar Trade Secret

The question of whether an invention should be practiced as a trade secret or should be made the subject of a patent application is one which, in all probability, is occurring daily throughout the country. Generally speaking, it is believed that the decisions usually favor the patent route. This is so because the chances are that competitors will probably come up with the same invention shortly, or because present day analytical tools permit identification of even complex formulations. Another factor not to be overlooked is the changeover in technical personnel. Other factors could be mentioned but these are believed to be enough to convey the idea that what is today a trade secret may not be one tomorrow.

The resort to patents as against trade secrets is particularly accepted in the drug field. This statement is believed to apply not only to new products but also to processing improvements.

It was not always thus, however, in the drug field, as a recent case strikingly shows. Reference is made to a case involving Listerine antiseptic. It appears that for some 75 years periodic payments totaling more than $22,000,000 and presently in excess of $1,500,000 annually have been paid to the originator of the formula and his successors.

In view of the interesting facts brought out in the case in question, it is felt that a close look at them is in order.

The case referred to was brought by Warner-Lambert Pharmaceutical Company against the successors in interest to Dr. J. J. Lawrence, the inventor of the original Listerine formulation.

Development of Listerine and First Contract Between Inventor and Lambert

"In the early 1880's Dr. Lawrence, a physician and editor of a medical journal in St. Louis, Missouri, devised a formula for an antiseptic liquid compound which was given the name "Listerine." The agreement between Lawrence and J. W. Lambert made in 1881, and that between Lawrence and Lambert Pharmacal Company made in 1885, providing for the sale of the Lawrence formula, were entered into in that city. Lambert, and thereafter his corporation, originally engaged in the manufacture and sale of Listerine and other pharmaceutical preparations on a modest scale there. Through the years the business prospered and grew fantastically and Listerine became a widely sold and nationally known product. The Lambert Pharmacal Company, with various changes in corporate structure and name which are not material here, continued the manufacture and sale of Listerine and other preparations until March 31, 1955, when it was merged into Warner-Hudnut, Inc., a Delaware corporation. The name of the merged corporation was changed to Warner-Lambert Pharmaceutical Company, Inc.

"Prior to April 20, 1881 Dr. Lawrence furnished Lambert with an unnamed secret formula for the antiseptic compound which came to be known as "Listerine," and on or about that date Lambert executed the first of the documents with which we are concerned here. This document, in its entirety, reads as follows:

" 'Know all men by these presents, that for and in consideration of the fact, that Dr. J. J. Lawrence of the city of St. Louis Mo. was furnished me with the formula of a medicine called Listerine to be manufactured by me, that I Jordan W. Lambert, also of the city of St. Louis Mo., hereby agree for myself, my heirs, executors and assigns to pay monthly to the said Dr. J. J. Lawrence, his heirs, executors or assigns, the sum of twenty dollars for each and every gross of said Listerine hereafter sold by myself, my heirs, executors or assigns. In testimony whereof, I hereinto set my hand and seal, Done at St. Louis Mo. this the 20th day of April, 1881 Jordan W. Lambert (Seal).' "

Lambert began the manufacture of the formula in 1881 and adopted the trademark "Listerine." The agreed payments were reduced two times. The first time from $20 per gross to $12, and the second time from $12 to $6 per gross. The latter appears to be the present royalty rate.

Since its introduction, the composition of the compound has remained essentially the same and is still being manufactured and sold by Warner-Lambert, according to the reported case. It appears that the trade secret gradually became a matter of public knowledge. As a result, Warner-Lambert contended that its obligation to make payments was terminated by the public disclosure of the Listerine formula.

However, the court ruled that the obligation to pay on each and every gross of Listerine continues as long as this preparation is manufactured and sold by Lambert and his successors. Moreover this obligation comes to an end when they cease to manufacture or sell the preparation. The court pointed out that nothing compels Warner-Lambert to continue such manufacture and sale.

Warner-Lambert took the position that it could continue to manufacture and sell without making the payments required by the agreement because the formula acquired by its predecessors is no longer secret. The court ruled against Warner-Lambert on this phase, taking the position that the contractual relationship was such that the obligation of Lambert and its successors to pay is conditioned upon the continued manufacture or sale of Listerine. The court's language, in this connection, was as follows:

"Here, however, there is no such policy. The parties are free to contract with respect to a secret formula or trade secret in any manner which they determine for their own best in-

*Richards and Cifelli, Newark 2, New Jersey.

terests. A secret formula or trade secret may remain secret indefinitely. It may be discovered by someone else almost immediately after the agreement is entered into. Whoever discovers it for himself by legitimate means is entitled to its use.

"But that does not mean that one who acquires a secret formula or a trade secret through a valid and binding contract is then enabled to escape from an obligation to which he bound himself simply because the secret is discovered by a third party or by the general public. I see no reason why the court should imply such a term or condition in a contract providing on its face that payment shall be co-extensive with use. To do so here would be to rewrite the contract for the parties without any indication that they intended such a result.

"It may be noted that here the parties themselves made no reference to secrecy in either the 1881 or the 1885 agreements. The word 'secret' is not used anywhere in either of them. It is true that I have assumed during this discussion that the plaintiff is correct in its contention that what Lambert bargained for was a 'secret' formula. But that in no way justifies the further assumption that he also bargained for *continuing* secrecy or that there would be failure of consideration if secrecy did not continue.

"The argument that there was failure of consideration in 1931 after the agreement had been in force for some forty-five years because of disclosure then, is wholly devoid of merit. The plaintiff does not question that the conveyance to it of the 'secret formula' furnished consideration for the contract. Once a contract is supported by consideration its terms are up to the parties. Whether the consideration is adequate or not is no concern of the court.

"The parties are free to fix their own terms and they have done so here. Plaintiff's argument goes only to adequacy of consideration. There is no question of failure of consideration. One who acquires a trade secret or secret formula takes it subject to the risk that there be a disclosure. The inventor makes no representation that the secret is non-discoverable. All the inventor does is to convey the knowledge of the formula or process which is unknown to the purchaser and which in so far as both parties then know is unknown to anyone else. The terms upon which they contract with reference to this subject matter are purely up to them and are governed by what the contract they enter into provides.

"If they desire the payments or royalties should continue only until the secret is disclosed to the public it is easy enough for them to say so. But there is no justification for implying such a provision if the parties do not include it in their contract, particularly where the language which they use by fair intendment provides otherwise.

"The case at bar illustrates what may occur in such cases. As the undisputed facts show, the acquisition of the Lawrence formula was the base on which plaintiff's predecessors built up a very large and successful business in the antiseptic or germicide field. Even now, twenty-five or more years after it is claimed that the trade secret was disclosed to the public, plaintiff retains more than 50 per cent of the national market in these products.

"Plaintiff lays stress on the large sums which have been spent in advertising and promoting the product, and there is no doubt that this and the business acumen of plaintiff's predecessors have contributed greatly to the success of the business. But it may be noted that the advertising and promotional material is primarily based on what are claimed to be the extraordinary merits of the formula for Listerine which plaintiff's predecessors acquired from Dr. Lawrence. Plaintiff and its predecessors have proclaimed for many years through the widest variety of advertising and promotional media the unique, indeed, almost magical properties of the formula from which Listerine is still made which is the formula conveyed by Lawrence to Lambert.

"At the very least plaintiff's predecessors, through the acquisition of the Lawrence formula under this contract, obtained a head start in the field of liquid antiseptics which has proved of incalculable value through the years. There is nothing novel about business being transacted only in a small way at the outset of a contract relationship and thereafter growing far beyond what was anticipated when the contract was made. Because the business has prospered far beyond anticipations affords no basis for changing the terms of the contract the parties agreed upon when the volume was small.

"There is nothing in this contract to indicate that plaintiff's predecessors bargained for more than the disclosure of the Lawrence formula which was then unknown to it. Plaintiff has pointed to no principle of law or equity which would require or permit the court gratuitously to rewrite the contract which its predecessors made for these considerations.

"If plaintiff wishes to avoid its obligations under the contract it is free to do so, and, indeed, the contract itself indicates how this may be done. The fact that neither the plaintiff nor its predecessors have done so, and that the plaintiff continues to manufacture and sell Listerine under the Lawrence formula with great success, indicates how valuable the rights under the contract are and how unjust it would be to permit it to have its cake and eat it too.

"Thus, I hold that under the agreements in suit plaintiff is obligated to make the periodic payments called for by them as long as it continues to manufacture and sell the preparation described in them as Listerine."

One of the facts which weighed heavily in the court's mind in ruling that the obligation to pay was not conditioned on the formulation remaining secret was the fact that, although the formulation was apparently publicly disclosed in the *Journal of the American Medical Association* at least as early as 1931, there was no question raised by the Lambert interests for 25 years thereafter.

It is well to keep in mind that the decision referred to is a decision of a U. S. District Court and, considering the amounts at stake, the case in all probability will be taken to a higher court.

This case is a good illustration of the value of a trade secret. However, it is well to keep in mind that if one does deal with trade secrets he should be very careful to spell out the period during which the royal-

(*Continued on page 121*)

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U.S.I. CHEMICAL NEWS

Jan. ★ A Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1960

U.S.I.-International Formed To Serve Markets for U.S.I. Polyethylene Abroad

A new European company has been formed by National Distillers (U.S.I.'s parent corporation) to handle the overseas sales of PETROTHENE® polyethylene resins, and to provide technical service and help in developing markets to customers for polyethylene. The new unit will be called U.S. Industrial Chemicals Co. — International, Division of Sales and Development Company of National Distillers and Chemical Corporation—(International) S.A. Temporary headquarters were opened in September at Kirchenstrasse 13, Zug 1, Switzerland. Permanent headquarters and laboratories will be constructed in Baar, Canton of Zug.

A customer service laboratory will be an integral part of the new company. It will be completely equipped with processing and test equipment designed to meet European standards and operating conditions. The laboratory will be used to demonstrate processing techniques and for research and evaluation studies to help its customers develop new end-use markets and produce improved products. The laboratory will also include polymer testing equipment to insure product quality. The laboratory will service markets in the European countries, including the United Kingdom. Mr. Howard W. Woodham is the Manager of the new Technical Service Laboratory.

Sales Manager of U.S.I.—International is Mr. Kenneth E. Cosslett, who has been U.S.I.'s Assistant Export Manager. According to Mr. Cosslett, U.S.I.—International's PETROTHENE resin sales will be made through established representatives in European countries. The new company will be a supporting unit to help these representatives provide the close technical assistance which the polyethylene market demands.

Woodham

Cosslett

Ruthenocene and Osmocene Found to Have Aromatic Character, Like Ferrocene

Two more organometallic compounds are reported to behave like aromatics, although the compounds from which they are derived are completely nonaromatic. In this re-

MORE

Methionine Stressed for Cosmetic and Pharmaceutical Use

New Developments Summarized and Current Applications Reviewed in Paper Given at TGA Meeting

At the December meeting of the Scientific section of the Toilet Goods Association in New York, Dr. Harry J. Prebluda of U.S.I. and Dr. Irwin Lubowe of the New York Medical College spoke on the growing uses of methionine in drug and cosmetic formulations. Methionine is an essential amino acid containing sulfur.

World's largest zirconium ingot, 13,200 lbs., gets surface examination at Niles, Ohio, plant of Mallory-Sharon Metals Corporation (owned one-third by U.S.I.). Ingot was melted from zirconium chunklets produced by company's exclusive sodium reduction process. Melting of giant 30-inch ingot is regarded as significant achievement, since cost of strip and sheet products is directly affected by ingot size.

Increased knowledge of methionine's reactions and functions in the living organism has stimulated a considerable amount of interest in the compound. Clinical studies following up on basic biochemical research have pointed to new uses for synthetic DL-methionine in pharmaceuticals and cosmetics. U.S.I. has been a pioneer in the development and use of synthetic DL-methionine by the animal feed and pharmaceutical industries.

Topical Applications

Clinical trials have been conducted with methionine and its derivatives in the topical treatment of various cutaneous diseases with great success. Data on the rate and extent of methionine absorption through the skin indicates nearly half the efficiency of oral feeding. This means that some of the polyfunctional properties of methionine can be utilized by formulators of cosmetics, toiletries and topically applied medications. Commercial preparations containing DL-methionine along with other ingredients for topical use are presently appearing in this country and abroad. Aerosol sprays are also being explored.

A therapeutic compress containing methionine has been formulated which has proven very effective in the early treatment of infectious and eczematous dermatitis. There have been several favorable reports on the value of methionine for wound healing in protein depleted animals and humans.

MORE

Polyurethane Foam Now Used in Bone Surgery

According to recent reports, surgeons can now "glue" broken bones, permitting patients to move a fractured limb while it is healing. Polyurethane foam is the material used, and it has already been tested successfully in hundreds of cases of serious fracture demanding reduction by surgery.

The foam is prepared right at the operating table from sterilized prepolymer and activator, then poured into place by the surgeon. It hardens rapidly, and the patient can move the limb within a few hours. Patients have walked on broken legs so treated in two to seven days after surgery.

The polyurethane foam is quickly replaced by new bone which grows through and around it. No toxic reaction has been reported.

New Data Sheet on Caustic Soda Just Issued by U.S.I.

Specifications, properties, applications and shipping information for caustic soda are detailed in a new data sheet now available from U.S.I.

The material, which U.S.I. ships as commercial grade 50% liquid in tankcars, tank trucks and barges from two plants at Huntsville, Alabama, is used primarily in the manufacture of chemicals, rayon and film, pulp and paper, petroleum derivatives, cleansers, textiles and soap.

The data sheet can be obtained from U.S.I. sales offices or from the Chlorine and Caustic Soda Sales Department, U.S. Industrial Chemicals Co., 99 Park Avenue, New York 16, N.Y.

CONTINUED

Methionine

Oral Use

Many cases of chronic peptic ulcer have been treated with methionine, with good clinical healing results in 80% of the patients. The addition of methionine to infant oral formulas is effective for clearing up cases of diaper rash. Similarly, methionine has been used orally for urine odor control with older patients in hospitals and other institutions. Methionine intake at high levels has been used in the treatment of stubborn urinary tract infections. Stable chemical reaction products from organic acids and methionine derivatives have been prepared which show clinical promise for a series of non-toxic wide-spectrum urinary antiseptics.

Methionine has been used in formulations for treating coronary artery disease in humans. The material also seems to protect biological systems against natural or nuclear radiation. More recently, methionine has been tried in the treatment of schizophrenia in a European psychiatric clinic with excellent results. American workers have already started to explore the possibilities of using methionine by itself or in combination with recognized tranquillizers for the treatment of mental disease and emotional depression brought about by impaired nitrogen metabolism.

The technical presentation before the TGA was documented with 48 references. Reprints can be obtained from U.S.I. on request.

CONTINUED

Organo-metallics

spect they are like ferrocene (dicyclopentadienyliron) which appears to have aromatic reactivity although it is derived from non-aromatic cyclopentadiene.

The materials are ruthenocene (dicyclopentadienylruthenium) and osmocene (dicyclopentadienylosmium), prepared from ruthenium trichloride and osmium tetrachloride plus cyclopentadienylsodium which is a reaction product of cyclopentadiene and metallic sodium. Both ruthenocene and osmocene undergo substitution reactions that are characteristically aromatic. They react with acyl chlorides in the presence of aluminum chloride in a way typical of aromatic Friedel-Crafts reactions. They can be metalated with n-butyllithium to give (after carbonation and hydrolysis) mono- and dicarboxylic acids.

Because all of these metallocenes participate in the Friedel-Craft reaction, it has been possible to prepare novel compounds containing two different metals—ferrocenyl ruthenocenyl ketone, for example.

New Polyethylene-Lined Drums Designed to Ship Liquid Chemicals

A new type of polyethylene-lined drum now available to the chemical industry has an outer pack which consists of wood members reinforced with double-dipped, galvanized steel binding wires and staples. This exterior is said to be corrosion-resistant, and to make the drums lighter, more durable and less expensive than the usual combinations of steel and polyethylene.

The drums have passed MCA-ICC tests for regulated liquids, and can now be used for any liquid safe in polyethylene. This includes corrosive, inflammable and toxic materials.

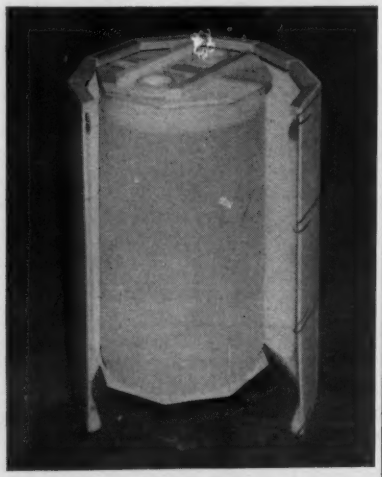

Photo courtesy Delaware Barrel & Drum Co.

TECHNICAL DEVELOPMENTS

Information about manufacturers of these items may be obtained by writing U.S.I.

Amino-acid resins—a series of ion-exchange resins specially prepared for separation and analysis of amino acids—are now on market. Available in two types for use with fraction collectors or amino-acid analyzers **No. 1550**

Plastics safety handbook now being sold is first such volume devoted entirely to safety ever to be published for plastics processing industry. Many industry processes are specifically treated, giving latest safety methods. **No. 1551**

New portable hydrocarbon detector gives rapid analysis of total organically bonded carbons in gases, with sensitivity better than 0.1 ppm. Can monitor air pollution or lower explosive limits, detect leaks or impurities in systems. **No. 1552**

New catalog offers reprints of technical journals and books long out of print but in great demand. Reprints are reproduced in book form by offset process, and are sold both paper-bound and cloth-bound. **No. 1553**

Mobile vacuum system can now be obtained which is claimed to produce any desired moderate vacuum (250 mm to 0.5 mm) and hold it within ±0.2 mm, in an airtight system. Plugs into any 115-volt, 60-cycle, a-c outlet. **No. 1554**

For painting and decorating polyethylene, new flexible lacquer has been developed. Said to be durable, chip-proof; will not come off with handling. No special treatment of polyethylene needed to make lacquer adhere, it is claimed. **No. 1555**

Measurement of chlorine-in-air in concentrations from ½ to 20 ppm can now be accomplished with new field detector kit. Employs aspirator bulb to draw samples across detector tube of silica gel. Reaction yields blue stain on gel. **No. 1556**

English translations of Crystallography, a bi-monthly publication of the USSR Academy of Sciences, can now be purchased. Offers experimental and theoretical papers on crystal structure, growth, and other phases of the subject. **No. 1557**

PTH (3-phenyl-thiohydantoins) derivatives of amino acids being offered as tools in protein and peptide structure determinations. Used as standards and for comparisons when applying Edman method to study of protein structures. **No. 1558**

New automatic recording vacuum balance can weigh samples in air or inert gases, at atmospheric or reduced pressures, at room or higher temperatures, on balance pan or suspended below balance in a furnace. **No. 1559**

PRODUCTS OF U.S.I.

Alcohols: Ethyl (pure and all denatured formulas); Anhydrous and Regular Proprietary Denatured Alcohol Solvents SOLOX®, FILMEX®, ANSOL®M, ANSOL PR.

Organic Solvents and Intermediates: Normal Butyl Alcohol, Amyl Alcohol, Fusel Oil, Ethyl Acetate, Normal Butyl Acetate, Diethyl Carbonate, DIATOL®, Diethyl Oxalate, Ethyl Ether, Acetone, Acetoacetanilide, Acetoacet-Ortho-Chloranilide, Acetoacet-Ortho-Toluidide, Ethyl Acetoacetate, Ethyl Benzoylacetate, Ethyl Chloroformate, Ethylene, Ethyl Sodium Oxalacetate, Sodium Ethylate, Urethan U.S.P. (Ethyl Carbamate), Riboflavin U.S.P.

Pharmaceutical Products: DL-Methionine, N-Acetyl-DL-Methionine, Urethan USP, Intermediates.

Heavy Chemicals: Anhydrous Ammonia, Ammonium Nitrate, Nitric Acid, Nitrogen Fertilizer Solutions, Phosphatic Fertilizer Solution, Sulfuric Acid, Caustic Soda, Chlorine, Metallic Sodium, Sodium Peroxide.

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From left to right: Benjamin Schneider, newly elected president of the G. F. Harvey Company; Les Sauers, now president of Lanolin Plus's new division, L.P. Laboratories; Ralph O. McGraw, Jr., district manager of the mid-west territory, the Onyx Oil & Chemical Company; and Dr. Peter D. Orahovats, who formerly with the Merck Institute, has joined the Bristol-Myers Products Division as medical director.

NEWS . . .

Appointments and Promotions

Benjamin Schneider has been elected president of the **G. F. Harvey Company.** Mr. Schneider will continue his responsibilities as president of the Purdue Frederick Company, a position he has held since 1954. He joined that company in 1953 as executive vice-president.

Lanolin Plus has appointed Les Sauers president of its newly formed division, **L. P. Laboratories,** which is to handle a newly acquired group of products including Dr. Hostetter Stomach Bitters, Wash 'n Set, and Amazing, a nail polish hardener. Mr. Sauers was previously a vice-president of Lanolin Plus.

The new district manager for the mid-west territory of **Onyx Oil & Chemical Company** is Ralph O. McGraw, Jr., who has served as sales representative in Indiana, Illinois, and Wisconsin for the past five years.

Dr. Peter D. Orahovats has been appointed medical director of the **Bristol-Myers Products Division.** He had been head of the department of pharmacology and physiology at Merck Institute, Merck & Company, Inc. Donald L. Sanders, vice-president and director of corporate affairs, **Bristol-Myers Company,** has been elected a director of the firm. He began his career with Bristol-Myers in 1946 as a legal counsel.

Macauley Whiting, general manager of **The Dow Chemical Company's Midland Division,** has been elected a member of the Dow board of directors. Mr. Whiting, who has been with the firm since 1948, succeeded the late Dr. William H. Schuette in November as division general manager.

International Flavors and Fragrances, Inc., has named F. H. P. Trip a vice-president and deputy manager of the European area, which includes England, the Continent, Africa, and parts of Asia. His headquarters are in Zaandam, Holland. Mr. Trip was formerly managing director of the flavor division of Polak & Schwarz, before its merger with van Ameringen-Haebler a year ago.

Thomas F. Graham, who joined **Baxter Laboratories, Inc.,** in 1951 as a medical service representative, has been named clinical research coordinator of the northeastern United States for the firm.

The **Warner-Lambert Pharmaceutical Company** has advanced Milton Gold from manager of audits, systems, and procedures, to controller. W. Warren Lee has been promoted from manager of accounting to assistant controller, and Aleck M. MacKinnon, from budget director to assistant treasurer.

Paul J. van Helden, Jr., has been elected to the board of management of **Royal Zwanenberg-Organon Inc.,** the international holding company. Mr. van Helden, who is currently president of Organon Inc., joins four other members of the board, which supervises and directs the operations of some 17 subsidiaries, including N. V. Organon, Oss (Holland), Organon Laboratories Ltd. of London (England), and Organon Inc., of Orange, N. J., in the pharmaceutical field.

Marion Laboratories, Inc., has advanced J. R. Sperry from southwest division manager to the newly created position of national sales supervisor, with headquarters at the home office in Kansas City. Mr. Sperry will also be responsible for sales personnel and administering the supervisory and sales training programs.

Maurice H. Unthank, formerly head of the Ozone Research Pilot Plant of the Welsbach Corporation, has been appointed chief chemist of **Pace, Inc.** Mr. Unthank has also served as a quality control chemist for the city of Philadelphia.

Carter G. Kraege has been named manager of **Eli Lilly International Corporation's** new pharmaceutical production methods department. With the firm since 1952, Mr. Kraege has served most recently as chief of production methods for International.

Elizabeth Holloway has joined **Coty, Inc.,** as a product manager in the marketing division. She was formerly with Revlon, Inc.

The **Isodine Pharmacal Corporation** has made three appointments. Edward Drum, formerly director of drug sales for Helene Curtis Industries, has been named manager of national drug sales and merchandising. Charles Rosen, who has been with Isodine for the past five years, is now marketing manager-new products. New advertising manager is Phillip Katzev, who was formerly account executive at Emil Mogul.

The **Fragrance Process Company** has appointed Jack Barry, television producer and master of ceremonies, as executive vice-president of the firm, which specializes in aromatic advertising and merchandising.

GRAMICIDIN CREATES PROFITS NOT PROBLEMS

Gramicidin can add bacteriostatic punch to your products without raising the specter of drug resistance—for, in all its years of use, this Wallerstein antibiotic has never caused resistant microbial strains to develop in animals or man.

Production and Inventory Problems Simplified

Your production and QC operations will benefit from the uniform activity of Wallerstein gramicidin. *Strength specs are realistic and are adhered to.* And because it is stable (dry or in solution, and even at sterilizing temperatures), no expiration dating is needed for products containing this potent topical antibiotic.

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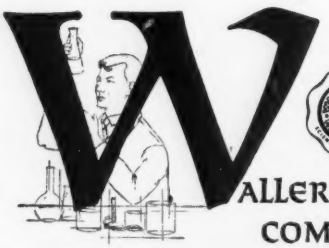

WALLERSTEIN COMPANY

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Wallerstein Manufactures Antibiotics and Enzymes for the Pharmaceutical and Cosmetic Industries

From left to right: John H. Kelly, northern New England divisional sales manager, Roche Laboratories; and three sa'es representatives for the Vitamin Division of Hoffmann-La Roche Inc.—James E. Chadwick in

Alabama, Florida, Georgia, and South Carolina; Joseph O'Connell in Dallas, Oklahoma, Louisiana, Mississippi, and Texas; and John H. Stuart in the southern half of California, Arizona, Utah, and New Mexico.

John H. Kelly, who has been sales promotion manager of the Vitamin Division, Hoffmann-La Roche Inc., has become northern New England divisional sales manager for **Roche Laboratories, Division of Hoffmann-La Roche Inc.** In the **Vitamin Division,** James E. Chadwick has been appointed representative in a new territory, Alabama, Florida, Georgia, and South Carolina; Joseph O'Connell is representative in the Dallas area and in Oklahoma, Louisiana, Mississippi, and Texas, replacing John H. Stuart, who has been transferred to Los Angeles, covering the southern half of California, Arizona, Utah, and New Mexico.

Dr. Joseph Seifter, who has been associated with **Wyeth Laboratories** since 1944, has been appointed director of basic medical sciences research at the Laboratories. According to Charles J. Kern, vice-president of research and development, this appointment is in accord with Wyeth's policy of affording outstanding scientists in basic research the opportunity to pursue laboratory work without sacrificing the advantages of administrative positions.

Irwin, Neisler & Company has appointed Robert L. Craig, M.D., Ph.D., medical director. Since 1952, Dr. Craig has served in the clinical research division of G. D. Searle & Company. Irwin, Neisler has also named five department heads as vice-presidents: M. M. Dalbey, advertising and sales promotion; C. J. Cavallito, research; L. J. Barrett, marketing; W. E. Reed, finance; and B. A. Marty, product development.

William W. Wiley has been appointed vice-president in charge of sales by the **Vitamerican Corporation.** Mr. Wiley was formerly with American Cyanamid Company, serving in both pharmaceutical and veterinary fields in product development, sales and promotion.

David J. Richards, an industrial sales engineer, has joined the **Arthur Colton Company** as a sales engineer in the Chicago office, covering central Chicago, northern Illinois, Wisconsin, Minnesota, Iowa, and Nebraska.

Edward A. Twerdahl, Jr., has been elected vice-president for market development of the **American Hospital Supply Corporation.** Mr. Twerdahl continues as president of the Arnar-Stone Laboratories, Inc.

Union Carbide Chemicals Company, Division of Union Carbide Corporation, has promoted Eugene H. DuVal and John E. Nimz to assistant to product sales manager, and Fred L. Martin to technical representative. Mr. DuVal, who will work on the marketing of functional fluids and Ucon lubricants, has been with the firm since 1946, most recently in the product marketing group. Mr. Nimz, with the firm since 1947, will assist in the marketing plans for acids, anhydrides, chlorinated solvents, methanol, and vinyl acetate. He was formerly technical representative. Mr. Martin, a technical correspondent with Carbide since 1958, will be in the San Francisco district sales office.

Samuel Kostin, manager of **Metro Glass Company's** Baltimore branch sales office for the past several years, has been appointed special representative. He is succeeded by James E. Lowry.

From left to right: Dr. Joseph Seifter, director of basic medical sciences research, Wyeth Laboratories; Dr. Robert L. Craig, medical director of Irwin, Neisler & Company; William W. Wiley, vice-president in

charge of sales, Vitamerican Corporation; David J. Richards, sales engineer in the Chicago office, Arthur Colton Company, to cover central Chicago, northern Illinois, Wisconsin, Minnesota, Iowa, Nebraska.

Psst! there's nothing finer

Perfumes for AEROSOLS by Synfleur

SACHET SPRAYS

Lavender	DH-66
Cologne	DH-111
Cologne Bouquet	DH-117
Carnation	DH-131
Cedar Wood	DH-132

COLOGNES — PERFUMES

Cologne	DH-23
Bouquet	DH-28
Floral	DH-57
Lavender	DH-66
Lilac	DH-72
Floral Cologne	DH-83
French Oriental	DH-87
French Bouquet	DH-90
Cologne	DH-111
Jasmin Bouquet	DH-123
Mist Bouquet	DH-125
Mist Bouquet	DH-130
English Lavender	DH-133
Oriental Bouquet	DH-138
Sandalwood	DH-149

HOUSEHOLD & AIR FRESHENER SPRAYS

Cologne	DH-23
Siberian Pine	DH-29
Pine Wick Type	DH-30
Xmas Tree Pine	DH-31
Meadowsweet Bouquet	DH-34
Souquet	DH-41
Lavender Bouquet	DH-45
Rose	DH-55
Orange Blossom	DH-59
New Mown Hay	DH-69
Spice	DH-74
Pine Virgin	DH-112
Cool Mint	DH-115
Spice Lavender Bouquet	DH-129
Carnation	DH-131
Medicinal	DH-139
Cool Pine	DH-144
Lavender Bouquet	DH-150

HAIR LACQUER PVP

Cologne	DH-23
Rose	DH-55
Orange Blossom	DH-59
Floral Bouquet	DH-79
French Oriental	DH-87
Oriental	DH-103
Cologne Bouquet	DH-117
Carnation	DH-131

SHAVE CREAMS, SHAMPOOS, SOAPS

Spice	DH-40
Lavender Bouquet	DH-44
Oriental Bouquet	DH-54
Rose	DH-55
Spicy Floral Bouquet	DH-56
Lilac	DH-72
Bay Rum	DH-89
Lemon	DH-94
Carnation	DH-131
English Lavender	DH-133
Lavender Bouquet	DH-150

PHARMACEUTICALS

Spice	DH-40
Medicinal	DH-70
Bay Rum	DH-89
Lemon	DH-94
Lilac Bouquet	DH-95
Jasmin Bouquet	DH-123
Floral Bouquet	DH-147

CREAMS, LOTIONS, COSMETICS

Cologne	DH-23
Spice	DH-40
Lavender Bouquet	DH-44
Oriental Bouquet	DH-54
Rose	DH-55
Orange Blossom	DH-59
Lavender	DH-66
Floral Bouquet	DH-76
Lemon	DH-94
Lily Muguet	DH-102
Lavender	DH-119
Carnation	DH-131
Cologne	DH-142
Floral Bouquet	DH-147

MOTH & INSECT SPRAYS

Siberian Pine	DH-29
Cedar Balsam Pine	DH-33
Violet	DH-42
Spicy Mint	DH-50
New Mown Hay	DH-69
Spice	DH-74
Para Odor	DH-122
Jasmin Bouquet	DH-123
Cedar	DH-127
Cedar Wood	DH-132
English Lavender	DH-133
Lavender Bouquet	DH-150

Synfleur offers this comprehensive line of perfumes *especially* developed for aerosols. Synfleur's ability to create the finest perfumes for special applications dates back to 1889. For this reason you can be confident that the perfumes listed here are absolutely perfect for your aerosols. High ranking in consumer preferences, Synfleur perfumes are sales winning fragrances. You can be sure that they will keep your product sold, too.

If you have a special problem, Synfleur's extensive facilities and technical skills are at your service. Conferences are strictly confidential. If you need additional information, write us. You can expect a quick reply to your inquiries.

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New York Sales Office: Telephone Plaza 7-1960

From left to right: T. E. Hicks, who is resuming management of the Pepsodent Division, Lever Brothers Company; Robert W. Munson, assistant eastern district sales manager, The New Jersey Zinc Company;

Edward W. Danitz, manager, the New Brunswick, N. J., manufacturing laboratories of E. R. Squibb & Sons; and Charles F. Manz, general sales manager of the Professional Division, Lehn & Fink Products Corporation.

T. E. Hicks, vice-president of **Lever Brothers Company,** has resumed management of its **Pepsodent Division,** after serving for ten months on special corporate assignments. Mr. Hicks succeeds William T. French, who has become president of another organization. Edward Gunther has joined the Division as product manager for the Air-Wick line. Mr. Gunther was previously with the Vick Chemical Company.

The New Jersey Zinc Company has appointed Robert W. Munson assistant eastern district sales manager. With the firm since 1947, Mr. Munson had been in the pigment sales organization in New York City.

Edward W. Danitz has been appointed manager of the New Brunswick, N. J., manufacturing laboratories of **E. R. Squibb & Sons,** succeeding Arthur W. Willis, who has become assistant director of manufacturing operations. Mr. Danitz joined Squibb in 1942, and has been assistant plant manager since 1954.

Charles F. Manz, field sales manager of the **Professional Division of Lehn & Fink Products Corporation,** has been promoted to the new position of general sales manager of the Division. In the **Lehn & Fink Division,** Roger M. Kirk, Jr., has become sales manager, succeeding Robert W. Naething, who has resigned. Mr. Kirk was formerly vice-president of sales and advertising for Cook Chemical Company.

Eaton Laboratories Division of the Norwich Pharmacal Company has established a new sales division in Cleveland, and three new sales districts in Philadelphia, Indianapolis, and St. Louis. Donald B. Murray, assistant to the sales manager, heads the new division. He is replaced by Wayne Buckhanon, formerly manager of Eaton district headquarters in Kansas City; and Keith Palmer, a professional representative in Houston, is now in charge of Mr. Buckhanon's district. Charles Scruggs leaves the Lubbock, Texas, area to manage the St. Louis district; Val Dickman, already based in Indianapolis, now heads that district; and Paul Batterly has been appointed manager of the Philadelphia district.

Abbott Laboratories has appointed Warren Bushnell supervisor of electrical and mechanical repair in the central shop, and Wallace Patrick as supervising engineer of area maintenance.

F. Kenneth Beirn has resigned his position as vice-president in charge of advertising for **Revlon, Inc.** to join General Development Corporation.

James W. Bradley has been named president of **Smith-Dorsay Pharmaceuticals.** He had been director of sales and promotion of J. B. Roerig & Company, Division of Chas. Pfizer & Company, Inc.

The **Meer Corporation** has appointed Thomas Gerard director of its new **Plant Hydrocolloids Laboratory.** Mr. Gerard was formerly with Stein-Hall & Company. Dr. William A. Meer has been appointed director of Meer's **Quality Control Laboratories** at North Bergen, N. J.

William J. Hasey, veteran member of the **A. H. Robins Company** sales staff, has been appointed assistant sales manager for the firm. He has been central region sales manager, supervising 95 men in six states. Robins has also appointed Ray B. Hanchey to the new position of sales training director. He was formerly district supervisor, centered in Dallas, Texas.

The **Schering Corporation** has appointed A. Everett Manwaring to the newly created position of field sales manager, to direct the entire field force. Mr. Manwaring joined Schering in 1947. Most recently he has been western regional sales manager.

Armour and Company has appointed Victor Conquest, vice-president, as European representative, with offices in Paris. He will supervise present Armour research and development activities with universities and private industry in western Europe and Great Britain.

Dr. Sidney Weiss has been appointed a group leader in the **Colgate-Palmolive Laboratory for Dental Medicine Research** on the Rutgers University campus. Dr. Weiss had been in the Oral Products Section of the Toilet Articles Division's Research and Development Department. Joseph DiSomma has been appointed a chemist in the Oral Products Section of the Research and Development Department of the Division.

Crown Cork & Seal Company has established a new southwest sales region for Colorado, Kansas, Missouri, New Mexico, Oklahoma, Texas, and Arkansas. Leonard S. Martin is regional sales manager of the region and Eldon E. Blust, formerly sales representative in the St. Louis district, succeeds Mr. Martin as St. Louis sales manager. John J. Luviano has been advanced to general manager of Crown's **Machinery Division.**

Mead Johnson & Company has announced several changes. W. Paul Torrington, a director and a member of the board since 1957, has been elected an executive vice-president. Russell L. Bauer, chief engineer for over four years, has been appointed to succeed Mr. Torrington as vice-president for marketing, and Charles E. Ennis replaces Mr. Bauer as chief engineer. S. William Kapranos, formerly vice-president for product planning, has been appointed vice-president for Latin American operations, succeeding Donald E. Hilton, who has become special assistant to the vice-president for operations of the **International Division.** Howard R. Alexander, who succeeds Mr. Kapranos, has served as an economic analyst in product planning since 1955. Mr. Hilton joined the firm in 1957 after three years as a private consultant in pharmaceutical exportation, prior to which he had been president of Pfizer International Corporation. Associate medical director of the **Nutritional and Pharmaceutical Division** of the company is Dr. Louis F. Rittelmeyer, Jr., formerly associate professor of preventive medicine at the University of Mississippi.

New Drug Exchange Officers

Carl K. Raiser, Smith Kline & French Laboratories, has been elected president of the Philadelphia Drug Exchange. Other officers are: treasurer, T. McKenna, Shoemaker and Busch, Inc., who was re-elected, and J. Mervin Rosenberger, re-elected secretary.

Re-named as directors are Harry C. Anderson, John R. Leaman, Herbert C. Rorer, H. C. Van Arsdale.

Walter Child Elected

Walter Child, vice-president of Stafford Miller, Inc., has been elected chairman of the Drug & Chemical Export Club of the Foreign Credit Interchange Bureau, and Henry Helmers, assistant credit manager, Pfizer International, Inc., has been elected vice-chairman.

Ingram Joins A. D. of A.

Robert J. Ingram has been appointed national director of the newly organized drug industry department of the Federal Marketing Service Division, Advertising Distributors of America, Inc.

Folkers to Receive Perkin Medal

The executive director of fundamental research at Merck & Company, Karl Folkers, has been elected to receive the 54th Annual Perkin Medal, which will be presented at the Society of Chemical Industry's award dinner in February. The award is conferred in recognition of outstanding scientific achievement, which for Dr. Folkers is his work in vitamins and antibiotics.

KARL FOLKERS

Foundation Chooses George Straayer

George C. Straayer, director of professional and trade relations for Schering Corporation, has been elected a member of the board of governors to the class of 1964 of the Arthritis and Rheumatism Foundation.

Givaudan Entertains

More than 300 members of the perfume, soap, cosmetic, and related industries were guests of Givaudan-Delawanna, Inc., at the recent annual reception and cocktail party, which was held at the University Club in New York City.

Dr. Theimer Elected

Dr. Ernst T. Theimer has been selected chairman-elect of the North Jersey Section of the American Chemical Society, to serve during 1961. Dr. Theimer is director of research of the Union Beach, New Jersey Research Laboratories of International Flavors & Fragrances Inc.

ERNST T. THEIMER

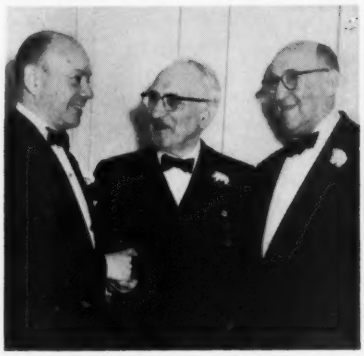
Pharmacopial Convention Elects Dr. Beal Chairman

Dr. George D. Beal was elected chairman of the board of trustees of the United States Pharmacopial Convention at the recent annual meeting. He succeeds Dr. Robert L. Swain. Dr. Adley B. Nichols was re-elected secretary of the board.

Mallinson Joins Project Hope

Harry Mallinson, former president of Eli Lilly International, has accepted a position on the staff of Project HOPE, the organization that will send a hospital ship to southeast Asia early in 1960, which is sponsored by the People-to-People Health Foundation.

Irwin, Neisler & Company's five department heads who have been named vice-presidents, left to right: M. M. Dalbey, advertising and sales promotion; C. J. Cavallito, research; L. J. Barrett, marketing; W. E. Reed, finance; A. B. Marty, product development, confer on marketing Analexin.



Dr. Selman A. Waksman (center), discoverer of streptomycin, is congratulated by Louis Zahn, Ciba, on receiving City of Hope's Leiferman Award at Chicago Salute to Medical Research Dinner. Morris Fishbein (right) was toastmaster.

Oscar Zeitz Retires

Oscar A. Zeitz, treasurer and assistant secretary of Hoffmann-La Roche Inc., has retired after 30 years with the company, it was announced at a dinner in his honor at the Pennington Club, Passaic, N. J., by Donald A. Brisbane, financial vice-president.

Mr. Zeitz joined Hoffmann-La Roche in 1929, became assistant treasurer in 1944, and controller ten years later. He was advanced to treasurer and assistant secretary in 1958.

Parenteral Drug Officers

The following officers have been elected for the year 1960 by the Parenteral Drug Association, Inc.: president, John Henderson, Chase Equipment Corporation; vice-president, Raymond W. Barton, Mead Johnson & Company; regional vice-president, Harold Dembo, Chicago Pharmacal Company; secretary, Hubert E. Boyden, William H. Rorer, Inc.; and treasurer, Joseph W. Kouten, Smith-Miller-Patch, Inc.

New CSMA Officers

The Chemical Specialties Manufacturers Association has elected George W. Fiero of Esso Standard Oil Company as president for the coming year. H. W. Hamilton, for many years secretary of the Association, was appointed to the newly created executive vice-presidency.

First vice-president is Charles E. Beach, John C. Stalfort & Sons, Inc.; second vice-president, Charles E. Allderdice, Jr., The Bell Co.; treasurer, Frederick G. Lodes, Lodes Aerosol Consultants, Inc.; and secretary, A. A. Milliken.

At DCAT luncheon meeting, left to right: Robert E. Horsey, Givaudan-Delawanna, luncheon chairman; Dr. John R. Heller, director, National Cancer Institute, speaker; William W. Huisking, Chas. L. Huisking & Co., president.

Shoemaker Retires from Dow

Clayton S. Shoemaker, president of the export companies of The Dow Chemical Company, has retired from full-time activity with the firm. He will continue his association by developing new investment opportunities for Dow in Central and South America.

Mr. Shoemaker joined Dow in 1937 on the New York office staff, and, after serving in several positions, was made president of Dow's two export subsidiaries in 1952.

British Executive Visits Givaudan in the U. S. A.

R. E. Eckton, technical service manager of Givaudan and Company, Ltd., Surrey, England, has returned to England after three weeks in the United States touring the Givaudan facilities. The trip's main purpose was the closer coordination of the two Givaudan organizations.

PAC Officers Installed

At the Christmas party of the Pharmaceutical Advertising Club held at the Waldorf-Astoria, retiring president Thomas P. Lewis installed the new officers and directors.

The new president is John W. Eckman, vice-president, Thomas Leeming & Co., Inc.; president elect, Edmund R. Beckwith, Jr., president, Crookes-Barnes Laboratories; and vice-presidents Austin J. Daly, Lederle Laboratories, and William D. Gulick, Roche Laboratories.

George H. Weiler, Jr., is treasurer and Mrs. Audrey Girard is secretary. Both are with J. B. Roerig and Co.

The board of directors includes the officers and Ira Constant, Roche Laboratories; Arthur C. Emelin, Wallerstein Laboratories; Spencer M. Fossel, Spencer Laboratories; Thomas P. Lewis, Tailby-Nason Co.; John N. McDonnell, Schieffelin and Co.; Paul J. Micali, Schering Corp.; Joseph J. Ruvane, Organon Inc.; and Robert H. Spencer, Ted Bates and Co.

Sheffield Tube Wins Safety Award

A million man hours without a single lost-time accident is the plant safety record which has brought Sheffield Tube Corporation a special commendation from Connecticut's Governor Ribicoff, and the 1,000,000 Man Hours Award from the Liberty Mutual Insurance Company.

W. K. Sheffield, executive vice-president of the company, said in accepting the award that no one in the plant has lost a single day from an accident since January 1, 1959.

New officers of the National Pharmaceutical Council, left to right: Wilbur E. Powers, secretary; Franklin P. O'Brien, vice-president, G. D. Searle & Co., chairman, NPC executive committee; Nelson M. Gampfer, chairman, board, Wm. S. Merrell Co., president; Newell Stewart, executive vice-president; and William E. Woods, assistant to Mr. Stewart as the director of hospital relations. Not shown: vice-presidents Foster B. Whitlock, president, Ortho Pharmaceutical Corp.; Paul Gerden, secretary and general counsel, Abbott Laboratories; Henry S. McNeil, president, McNeil Laboratories; and secretary I. J. Sichel, vice-president and counsel, Ciba Pharmaceutical Products.

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Because...

- **Odorless and colorless — spring water clear**
- **Uniform and stable, blends perfectly with fats, oils and wax mixtures reducing stickiness and improving spreading properties**
- **Easily hydrated — a superb cosmetic oil, alternative for alkyl esters**
- **Dermatologically innocuous — neither a primary irritant nor sensitizer**
- **Excellent pigment wetting, suspending and dispersing properties**

CHEMICAL AND PHYSICAL PROPERTIES:

Setting point	2-5°C
Iodine Value	88-91
Acid Value	0.025 max.
Saponification Value	0.10 max.
Hydroxyl Value	207-211
Color (Iovibond	1.0 Y) max.
Unit 5¼" cell)	0.5 R) max.

Typical Composition:

C_{16}	5.0%
C_{18}	94.8%
Spec. Gravity 60°F	0.851

USES:

Make-up preparations (lipsticks, rouges, etc.)

Shampoos (superfatting)

Creams, ointments, lotions

Aerosols (hair sprays, suntan lotions, medicinal sprays)

Suppositories

Send for test sample and brochure containing complete details and suggested formulations.

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DESIGNED & EXECUTED BY ALEXANDER STOLL ADVERTISING, INC., HEMPSTEAD, N.Y.

New Facilities, Sales Divisions, and Headquarters

The new biological plant of **Quimica Reheis do Brasil,** near the Brazilian seaport of Porto Alegre, will go onstream in February, to supplement a similar operation in Uruguay, both directed by Mario Giorella Carrara, in providing liver fractions and other products for refinement at the firm's Stamford, Conn., plant. The three facilities comprise the **Tec Division of Reheis Company, Inc.**

The **Owens-Illinois Glass Company** plans a new plant in North Kansas City, Mo., for semi-rigid plastic bottles, and additions to its facilities in St. Charles, Ill., and Glassboro, N. J., to meet the increasing demand for polyethylene containers. A plastic container plant is also planned in Toronto, Canada, by the **International Division.**

A new wholesale drug division is to be opened by **McKesson & Robbins, Inc.,** at Lexington, Ky. It will comprise 30,000 square feet of warehouse and office space, and is expected to be operating this spring.

A. H. Robins Company, Inc., is to begin construction this spring of a six-story office addition to the Richmond, Va., plant, to be ready early in 1961.

Ayerst Laboratories has opened two new warehouses, one, a division headquarters, in Los Angeles, Calif., at 12833 South Spring St., managed by William Campbell, which is a move from the 2200 South Grand Avenue location. The other, managed by Richard Dobrin, is at 15620 Industrial Parkway, Cleveland, O.

The **Hazel-Atlas Glass Division of Continental Can Company** plans to build a research and development laboratory at Plainfield, Ill., near its newest container manufacturing operation, for research on glass compositions and their reactions. On State Route 59, it will employ some 200 persons when in operation.

A new research facility has been constructed by **Hazleton Laboratories** at its headquarters in Falls Church, Va. It is the first in a long-term expansion program, for studies on the effects of chemicals on biological systems.

Associated Drug and Chemical Industries of Missouri members at the Christmas party, left to right (front row): Morton Meyer, Thompson Hayward Chemical Co.; Franc A. Barada, Fritzsche Brothers, Inc.; Starling Gansner, K-V Pharmacal Co., secretary; J. Louis Lanz, Albert Verley and Co., treasurer; Robertson Clark, Mallinckrodt Chemical Works, 1st vice-president; Leo G. Peck, Peck's Products Co., retiring president; Robert F. Walsh, H. A. Baumstark and Co., president; Jamie C. Beard, Barada and Page, Inc., executive committee; William Carpenter, Columbia Southern Chemical Co., 3rd vice-president; Phil Yates, Marvin Yates Co., 2nd vice-president; E. E. Aldrich, Rexall Drug Co., executive committee; (back row) Dr. Justin S. Brewer, Sayman Products Co.; Marvin Yates, Marvin Yates Co.; Joseph W. Wise, Grove Laboratories, Inc., executive committee; Charles S. Fox, Aluminum Company of America; Charles Caspari, Monsanto Chemical Co.; Gerald F. Pauley, Organic Chemical Division, Monsanto, executive committee; Glenn H. O'Neal, The Dow Chemical Company; Paul A. Hein, Mallinckrodt Chemical Works; Tully C. Tupper, Jr., Organic Chemical Division, Monsanto, executive committee; Charles H. Harson, Chemical Division, Olin Mathieson Chemical Co., executive committee; E. Ted Mann, Dow executive committee.

At the Wallerstein Company's 25-year service banquet, Arthur C. Emelin, president, left, congratulating five new members of the Twenty-five-Year Service Club (usual order): Thomas F. Dogery, George F. Driscoll, Charles J. Smyth, Frank A. Driscoll and Irwin Stone.

Six employees of Givaudan-Delawanna, Inc., receiving gold Swiss watches in honor of their 25th year with the company, from E. R. Durrer, president, who is also celebrating his silver anniversary. The six are Ruth U. Sheridan, Fred Jaeckel, Urho Korpi, Rudy Angelino, Arend Vander Valk, and Joseph Miskiv. The party was held at the Swiss Chalet in Rochelle Park, New Jersey, and the evening included a steak dinner for the 340 employees present. Mr. Durrer and Dr. Max Luthy (also in the photograph), vice-president, production and research, both spoke briefly.

Instead of cutting a ribbon to open the new cancer research facility of E. R. Squibb & Sons, these gentlemen tightened an air filter head: Dr. Bernard Berk, director; John J. Toohy, Squibb general manager; J. E. Fogarty, Rep. of R. I.; Roland J. Dahl, vice-president.

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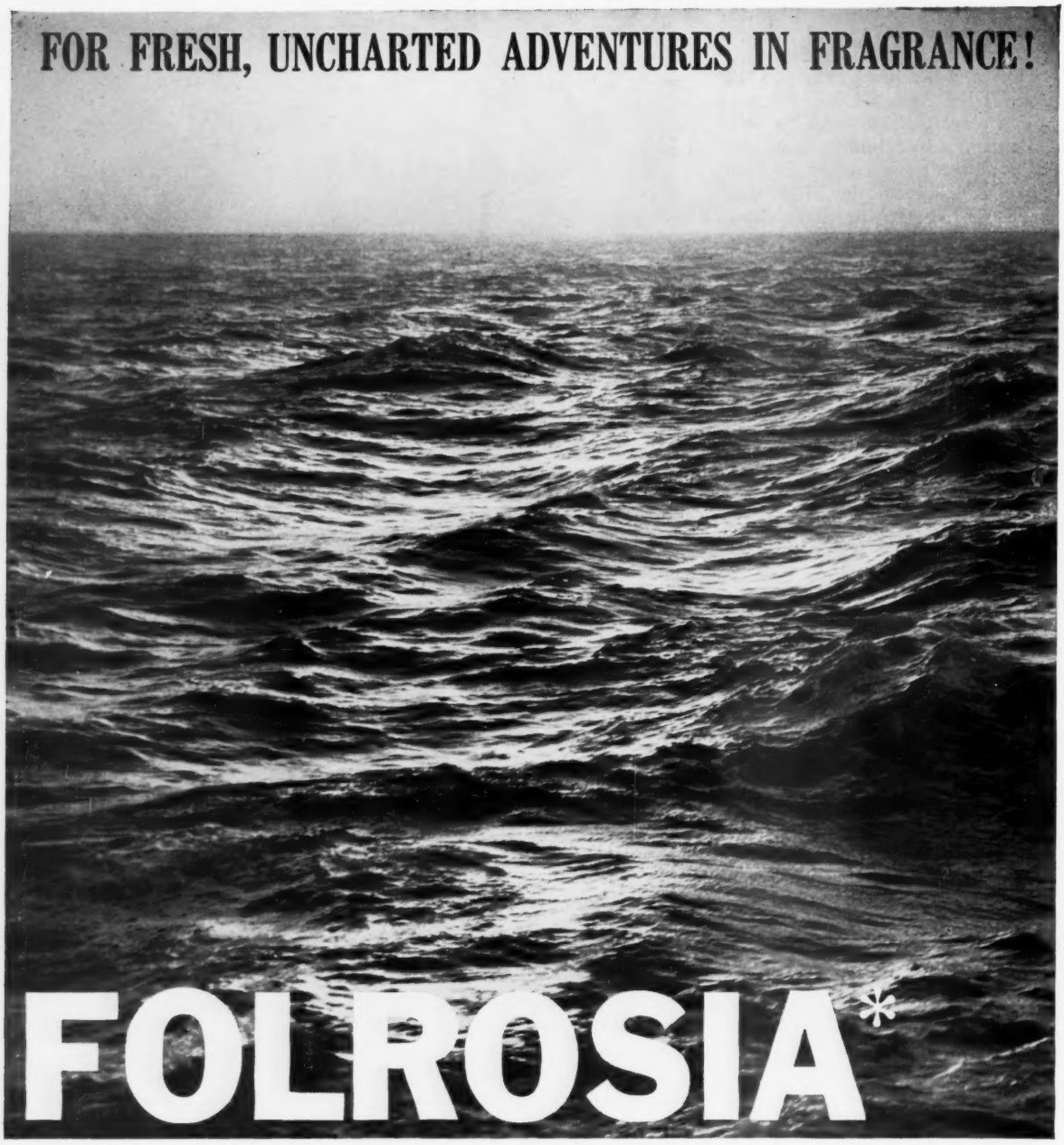
FOR FRESH, UNCHARTED ADVENTURES IN FRAGRANCE!



...a new, "broad-spectrum" synthetic aromatic with a *deep red rose* character. Use it to create a crisp, natural, leafy rose aura . . . or to lend intensity and personality to subtler blends.

FOLROSIA blossoms with new levels of floral realism! Whether you wish to enhance familiar rose materials, create bold new rose accents of uncommon floralcy and naturalness, or add fresh, lifelike notes to more subtle compositions, FOLROSIA provides a simple, yet unusual answer.

FOLROSIA possesses remarkable tenacity, with a fragrance and nuances reminiscent of fresh green rose foliage. It is extraordinarily stable in soaps, detergents, cosmetic preparations, and its odor effectiveness remains at a high level over extended periods. Write for samples and technical data.

*Trade-mark

GIVAUDAN

GIVAUDAN-DELAWANNA, INC.
321 West 44th Street
New York 36, N.Y.

John E. McKeen, president, Chas. Pfizer & Co., celebrating Christmas with 400 youngsters of the Williamsburgh section of Brooklyn at a party sponsored by the firm's employees—with cake, ice cream, and gifts of dolls, trains, and soldiers. Aldo P. Osti, well-disguised Pfizer safety engineer, joins the antics.

Dow Cleveland Office Moves

The Dow Chemical Company's Cleveland sales office has moved to new quarters on the 18th floor of the recently completed Illuminating Building, 55 Public Square.

New Carbide Sales Division

A southeastern sales division has been formed by Union Carbide Chemicals Company, Division of Union Carbide Corporation. It includes the Atlantic coast from Florida to New Jersey, and extends west through Pennsylvania to parts of Ohio, Kentucky, and West Virginia. Richard J. Hughes, the sales manager, will headquarter in Moorestown, N. J. His former position as district manager of the Delaware Valley district is now filled by the former assistant district manager, George S. Cooper. The new assistant district manager is Richard S. Butler.

A. Herzka Becomes Consultant

Alfred Herzka, B. Sc., A.R.I.C., until recently with The Metal Box Company, has established an independent practice as a pressurized packaging (aerosols) consultant. He may be reached at 54, Woodlands, London N.W. 11, England.

National Distillers Subsidiary

The National Distillers and Chemical Corporation has formed a wholly owned subsidiary in Switzerland, the Sales and Development Company, known as U.S.I.-International, to stimulate sales of polyethylene, with emphasis on Great Britain and the Continent. The sales manager is Kenneth E. Cosslett.

George Walbridge Perkins

George Walbridge Perkins, former Assistant Secretary of State for European Affairs, died January 10 at his home. He was 64.

Mr. Perkins was appointed to that post by former President Truman in 1949. In 1955 he was appointed Ambassador on the NATO Council by President Eisenhower, in which position he was succeeded in 1957, when he rejoined Merck & Company, with whom he was first associated in 1927 as a director. He had been executive vice-president and director of its Canadian subsidiary.

Firmenich Inaugurates Research Laboratories

Firmenich & Company, Geneva, Switzerland, recently inaugurated their new Research Laboratories, the construction of which has taken place during the last four years. The ceremony was opened by Dr. Roger Firmenich, a partner of the firm, who welcomed the more than 120 guests, including representatives of the Swiss Federal authorities, the Canton of Geneva, and the universities.

Firmenich's research team, which is headed by Dr. Max Stoll, has developed over the years, beginning with the cooperation of Dr. Philippe Chuit, the founder of the factory, and his associates, Martin Naef and Frederic Firmenich, with Professor Ruzicka, holder of the 1939 Nobel Prize in chemistry, and then lecturer at the Swiss Federal Polytechnic School in Zurich, immediately after World War I. Since then, three new research centers have been established, one in Paris, in 1947, and two others in 1955 and 1958, in Boston, Mass.

The new Research Laboratories recently inaugurated by Firmenich & Co. in Geneva, Switzerland, for research in perfumery and flavoring.

John G. Bill

John G. Bill, 55, president of Merck Sharp & Dohme, Division of Merck & Co., Inc., died December 27

JOHN G. BILL

in Hahnemann Hospital, Philadelphia.

Mr. Bill was first associated with Sharp & Dohme in 1925, as a sales representative. In 1953, after the merger of that firm with Merck & Co., he became a member of the Merck management council. In 1955 he was appointed president of the Sharp & Dohme Division.

Among the boards on which he served were those of Merck & Co., Ltd., the National Vitamin Foundation, the National Pharmaceutical Council and the American Foundation of Pharmaceutical Education.

Dr. George Avery Bunting

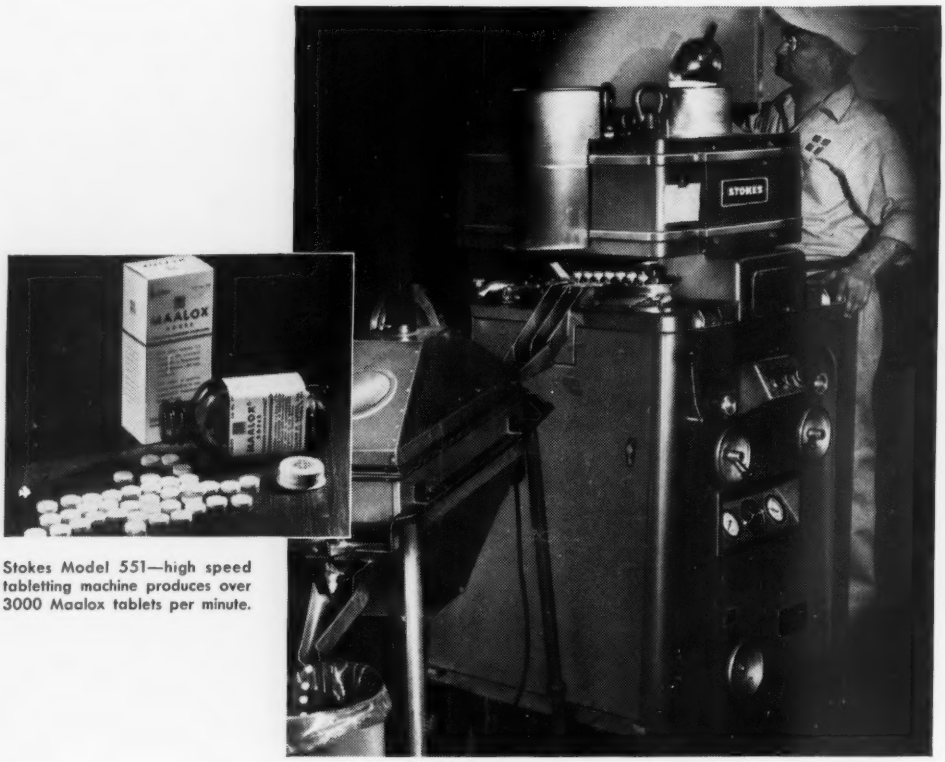
Dr. George Avery Bunting, chairman of the board and former president of the Noxzema Chemical Company which he founded in 1917, died December 31, in Baltimore, Md. He was 89 years old.

Having begun a career as a teacher, Dr. Bunting then studied pharmacy and chemistry. In 1914, as proprietor of Bunting's Drug Store in Baltimore, he concocted the original Noxzema formula. In 1949 his son, G. Lloyd Bunting, became president.

John McLean Hawkins

John McLean Hawkins, president of American Ferment Company, a subsidiary of Sterling Drug Inc., died December 16 in Lawrence Hospital, Bronxville, N. Y.

Mr. Hawkins joined Sterling in 1942 and was appointed a vice-president of its then Bayer Company Division a year later. In that same year he was named vice-president of the American Ferment Company, and in 1946, president.



Stokes Model 551—high speed tabletting machine produces over 3000 Maalox tablets per minute.

at William H. Rorer Inc....

1½ million ½" tablets per day ...with one Stokes 551

Immediate and widespread success of Maalox—an ethical antacid product for ulcer control—presented the William H. Rorer Co. with a production problem: how to keep pace with demand. Rorer solved the problem quickly by adding an eighth Stokes tabletting machine. This one: Model 551, a high speed rotary tabletting press developed by Stokes expressly for high volume production.

Over 3000 tablets per minute are produced by the 551 . . . an amount that previously required as many as three machines. And this high production rate is achieved while using an unusually large punch and die—½" in diameter—and without the added expense of forced-feeding! At present, Rorer is using the 551 on an 8-hour daily schedule. Plans include the installation of another machine as demands on production capacity increase.

The Model 551 is one more example of the way Stokes equipment matches the unique requirements of the pharmaceutical industry. Why not find out how Stokes can help meet your own production demands. Stokes Advisory Service will help you plan production, select equipment and train personnel. There's a Stokes representative as near as your phone.

Pharmaceutical Equipment Division
F. J. STOKES CORPORATION
5500 Tabor Road, Philadelphia 20, Pa.

STOKES

Management Forum

BY FRANCIS CHILSON
INDUSTRIAL CONSULTANT

The Price Investigation

It should be obvious to all intelligent persons that every investigation conducted by any government agency has three primary purposes: first, to secure maximum publicity for the politicians conducting the investigation; second, to secure enough facts to validate (for appropriations) the thesis upon which the investigation was founded; and third, to recommend remedial legislation should the facts warrant it. It is the first purpose, therefore, of every investigating committee to uncover any sort of condition that will ensure scare headlines. Since publicity is the first aim of such a committee, its strategy always is to dig up, before the first hearing is held, any sort of dirt that will beget big headlines. The Kefauver committee has done this with consummate skill. It has already placed the ethical drug industry on the defensive, and the first industry representative gave Kefauver the headlines.

It seems to me that the association that represents any given industry should have a strategy and tactics committee, and no representative of that industry should go before a Congressional investigating committee without taking counsel with the appropriate committee. Such a committee should have a "devil's advocate" to anticipate the government's line of attack, and industry representatives who are to appear before an investigating committee should be thoroughly drilled in the proper responses to make and how to dodge all questions of an unanticipated nature posed by the investigators. In the case of the Kefauver committee it was perfectly obvious that, as preparatory strategy, primary costs and customary selling prices of prominent drug firms would be obtained on a long list of drug specialties and that the selling prices of a lot of schlock houses and cut-rate outfits without character or overhead would be dug up as standards of comparison. The representatives of the trade thus far heard should have been better prepared.

We should emulate the practices of the British Foreign Office. I have a friend who for many years was connected with the British Foreign Office who has told me that the British never go into a foreign conference without careful rehearsal. The "devil's advocate" in such cases is always a man thoroughly grounded in the history, politics, and economy of the adversary nation. It is his job to represent the adversary, anticipating the position it will take. After thorough debate, the representatives of the British then go to the conference thoroughly prepared for it. I suppose this is why Will Rogers said in the Twenties, "America never lost a war or won a conference." Apparently this tradition still prevails, at least in our industry, because as yet we have shown no signs of winning this conference. We gave Kefauver the headlines he wanted and have allowed him to define "cost" as either the raw materials cost to the manufacturer, or the cost at the factory door. So far, we have goofed badly through lack of thorough cooperative preparation. And the prize remark of one of our representatives that "drug prices are not too high; people are too poor to buy them" incidentally provided Communists with a tasty propaganda line. That remark, if actually made, deserves a leather medal.

Although some of the witnesses were individually well prepared, it seems to me that this is an industry and not an individual company affair, and it should be so treated.

Willmes Presser

In the days when almost everybody in the drug trade did a substantial business in botanical extracts, I did a lot of work with presses of various types, and even designed one of my own in the hope of developing a pressing process to shorten extraction and recovery cycles. I never discovered a satisfactory press in commercial use in any industry and, by the time I had developed my own continuous press, the trade's interest in botanicals had begun to wane. I wish that at that time I could have got hold of the Willmes

Presser; I think it would have been just what the doctor ordered.

The press, invented and built in Germany, consists of a perforated, horizontal, rotatable stainless steel cylinder containing a centrally mounted rubber sleeve. In operation, the drum is filled with the material to be pressed and the sleeve is inflated with compressed air. That's all there is to it. When used with volatile solvents, the drum is enclosed within a vapor-tight jacket. It is used for pressing apples and other fruit, vanilla beans, glandular materials, botanicals, sludges, and alfalfa residues. Pressure exerted on one cubic foot of material amounts to 300 metric tons as compared with 100 tons for the conventional 47-inch vertical hydraulic press. It is sold in this country by Hubert C. Stollenwerck Inc., Egg Harbor City, N. J.

Industrial Parks

A considerable number of industrial parks have been established in this country since the war and there is widespread interest in them. An industrial park is not the same as an industrial district. There is nothing new about the latter, the first of which, the Clearing District, was established in South Chicago in 1885. This was merely an attempt to sort out industrial, commercial, and residential districts.

The industrial park, however, is quite a different thing. In the first place the industrial park is privately owned and is not necessarily an industrial district of a city. The developer or real estate operator of an industrial park provides developed sites with all necessary utilities ready for hook-up when the tenant moves in. Industrial parks usually are restricted to light, clean noiseless industries. Restrictions on land use, construction and type of production are very strict as a general rule, and in time these restrictions obviously might become very onerous. Land in such parks is always expensive because the developer is not in business for his health.

I would never recommend to a client that he take a site in an industrial park if an alternative were available. In the pharmaceutical industry, a product mix might be perfectly acceptable at one time and five years afterwards totally objectionable. A number of my clients are operating in industrial areas and are making products that violate the local codes, but they have not been caught as yet. A number of firms are making pharmaceutical chemicals which, at least in the initial stages, must to be classified as heavy industry. Since everybody has gone into research more or less deeply, it is impossible to predict what it will lead to. In the years of my practice I have been told innumerable times by my clients that they would not go into this or that line of endeavor but eventually, because of research discoveries and the promise of bigger profits, they have become involved up to the ears.

My feeling is that, when confronted with locating a new plant, you should buy plenty of land in an area where there are no restrictions at present, and where in the future you can have a deciding voice in preparing restrictions that will keep undesirable industrial neighbors out. This means getting into the smaller cities and villages. Land costs are but a fraction of those in an industrial park; hence you can buy a lot more of it for the same money. In an unrestricted area you are not obliged to take care of your surplus land, but in an industrial park you must. Small companies probably will find the industrial park advantageous. If they become successful they can move to larger sites.

Some people have objected to industrial parks on the ground that a large concentration of industry in a relatively small area invites the risk of objectionable union control. My own opinion is that, no matter where you are located, the unions will eventually take over, provided you are not smart enough to anticipate them by providing your people with everything the unions have to offer and a bit more.

One thing is clear to me: in 50 years large cities will cease to be manufacturing centers; they will become office, financial, service, and residential centers with the factory areas in the suburbs and beyond.

Planning the New Factory

At the risk of being repetitious, I am going to summarize once again the elements that must be considered in designing a factory—elements which apply to a small factory as well as to a large one. As a matter of fact, they apply with even greater force to the small factory, because the large factory's different elements require a sizable amount of space, which makes it easier to make space allocations.

External Service Area. This comprises everything which by its nature must be out of doors, such as parking lot, solvent or oil tanks, water tanks, sewage disposal or septic tanks, transformer banks, incinerator, garage, and power house. The small factory may not need an external power house, but, since the time may come when it will, provision should be made for this eventuality; in the meantime the space can be used for parking in allocating the external service area. The external service area should be along the perimeter of the plot in a location that never will interfere with the expansion of the factory or of any other element.

Internal Service Area. This area, of course, must be located within the factory building. It comprises personnel offices, first aid, locker rooms, toilet areas, maintenance shops, recreation areas, building equipment areas for air conditioning, dust collecting, dehumidifying equipment, surplus equipment storage, and the like. This area should be adjacent to working areas but along a fixed facade, so as not to interfere with logical expansion of the factory.

Office Area. This area should comprise all offices including factory offices but excluding foremen's

offices, which must be located in operating departments. Of all elements in a factory, offices are least apt to expand rapidly, particularly if the administrative and sales offices of the company are not located on the site. In smaller factories, offices are so laid out that they can be absorbed by the expansion of the personnel area or by the laboratories, but in this case ground must be available for the relocation of the offices when necessary.

Laboratories. Initially small and medium-sized plants will have a single laboratory area for research, control, and development. However, if research is successful, space must be available for research laboratories and that space must be adequate because research laboratories can multiply their initial size in a very few years.

Isolation Area. On the site there should be available, in one corner out of the way of all other elements, an isolation area for the manufacture of chemicals and finished products that are explosive, toxic, odoriferous, or obnoxious in any way. This sort of thing is becoming more and more a characteristic of the pharmaceutical industry. A division of such an area might include animal housing for research or production purposes, or big bulk and tankage operations.

Factory Area. This comprises warehousing, manufacturing, and packaging operations. Since the site is after all a factory, no restrictions should be placed upon the expansion of any element of the factory in at least two directions. The philosophy underlying the layout of the factory will vary with economic conditions and initial product mix, but never place any element in the path of the allocated expansion of the factory. Although this seems common sense, the principle is violated all the time, even in brand new factories. It is almost a rule—especially when inexperienced architects are employed—that boiler plants, air conditioning equipment, shops, and toilet areas are placed directly in the path of factory expansion. The effect of such cock-eyed placement can be disastrous, especially when the site is too narrow to permit two-way expansion. It is precisely for this reason that all old factories and many of the new are such awful messes. Sometimes individual elements of a factory are misplaced simply to save a few dollars in initial construction costs, leaving the owner to suffer financially forever after.

My recommendation is to think big and plan accordingly. Then, when you have all the elements sorted out properly in your mind, plan the nucleus accordingly. I have planned factories as small as 20,000 square feet that are just as efficient and just as attractive inside and out as other factories 20 times as big. As a matter of fact, many of the very large factories I have visited have appalling layouts. Big companies make big profits and can afford big blunders.

Kefauver, Please Note

The Bullock Fund published a study of the drug industry which might be interesting to the hillbilly senator from Tennessee. With 1948 as 100, and using a weighted composite of the earnings of Abbott, Parke Davis, Merck, Pfizer, Sterling, Bristol Myers, Lilly, and Schering, the following results were obtained for the years 1957. (This study was published in May 1958.)

Sales	220.9
Net income	195.8
Market price of drug securities	218.6
Dow Jones averages	262.1
Pre-tax profit	25.2
Ret. on invest.	18.8
Yield	4.0
Price-earnings ratio	12.7

If you compare the net earnings and the return on investment with other industrial companies as published annually by *Fortune*, the drug industry is not too far in the forefront.

In 1957, lots of companies made more on invested capital than the drug companies made: Champion Spark Plug made 26.6; Botany Mills made 24.6; Pepsi Cola made 23.6; Chemstrand made 28.4.

In 1957 a lot of companies made almost as much on sales as the drug industry did: Amerada Petroleum made 21.9 per cent; DuPont made 18.7 per cent; Ideal Cement made 18.9 per cent.

What's the hullabaloo about?

Miracle Drugs

The pharmaceutical industry should broaden its scope to include products other than those which are (ostensibly) therapeutic. The other day I was reading about an army general who advocated before a Congressional committee a return to chemical warfare as being the most humane way to deal with our enemies. He talked of chemicals that would paralyze whole armies and cities temporarily. (I don't think much of this one. The City of New York gets paralyzed every New Year's Eve without much aftereffect save a colossal headache.) The general talked of drugs that would make people wildly hysterical. He even suggested to the congressmen that if the gas were administered to them they would be dancing on the tables in a matter of minutes. If any drug or chemical would make the fat slobs we send to Congress dance on tables, I am all for it. Congressmen like tables; they like to sit at tables and occasionally sleep under them. More often than not they sleep in their seats in the House, as I have so often observed.

But, since we can induce sleep or prevent it, induce hysteria or tranquilize it, and cause people to see visions and hear voices, who knows but that we may come up with a drug that will induce thinking?

What a different world it would be if everybody used his mental powers to full capacity. Thinking is so difficult that if we were forced to think intently with all our powers we'd die of the effort in a couple of days. Still, a thought shot is not a bad idea. I've tried alcohol, but its side effects are too serious. Still the creative thoughts generated under its influence are altogether remarkable, if one could remember what they were.

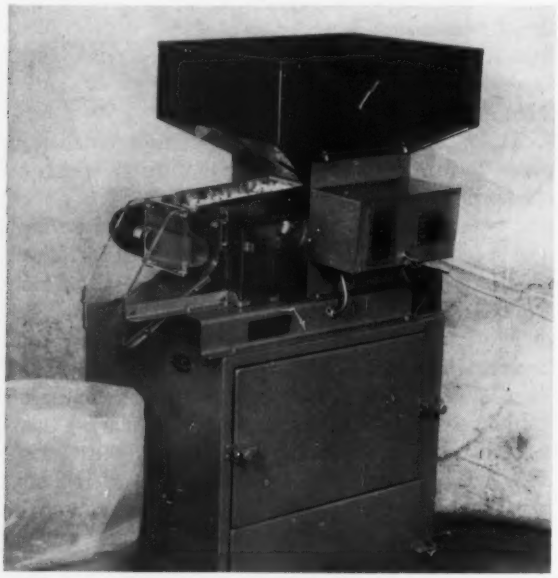
Machinery Agent Wanted

A/S Diaf trading Co. Ltd., 25-29 Vibevej Copenhagen, Denmark, are looking for an American agent to handle their line of pharmaceutical and cosmetic processing machinery. This firm makes all sorts of mixers, roller mills, sieves, tablet presses, and tube fillers. The stuff, judging from the catalogues they sent me, looks extremely well designed.

Tablet Cleaner

The Lakso Company, Inc., P.O. Box 257, Fitchberg, Mass., has announced the development of a new machine for removing chips and dust from uncoated tablets.

Tablets are fed out of a stainless steel hopper over a variable-speed sifter screen where even heavy chips and half-tablets are removed. As the good tablets pass off the sifter screen, they are rolled over a second stainless steel screen where any remaining powder is sucked away by the vacuum dust-removal unit on which the Vacu-Sift is placed.



The Vacu-Sift is mounted directly on its *own* heavy-duty dust-removal unit. The whole unit is mounted on ball-bearing swivel castors for easy portability.

A capacity of 500,000 tablets one-quarter inch in diameter can be cleaned per hour by the Vacu-Sift. All contacting parts are stainless steel. The machine occupies less than four square feet of floor space.

The Chemical Show

According to reports, the Chilsonator was the hit of the Chemical Show recently held in New York. The eastern manager of W. J. FitzPatrick Company reported keen interest in the machine and a great many tentative orders for it. The machine was conceived to eliminate tray spreading and drying altogether. In the years I have worked with this equipment I never encountered any tablet mixture that could not be run on it, once the requirements of the product were learned. Some products require heating the rolls before starting, others chilling, and the rolls are cored for either purpose. Some materials may need as a starter slight dampening with alcohol, or alcohol and water, which is then driven off by the heat of compression. The product comes off the rolls in irregularly sized placques which need only to be run through a dry granulator to produce the finished granulation. Capacity is far beyond conventional means. I conceived this machine because I never could see any sense in wetting a batch or powder in order to form a granulation which then requires a long time to dry out.

High-Speed Mill

The Entoleter Division of Safety Industries, New Haven Conn., have introduced a new version of the high-speed mill or pulverizer for fine grinding. As you know, in conventional hammer mills and the like, the spinning shaft or rotor is the only moving element. In this new mill, called the ControlMil Series 27, the housing or inner wall of the mill rotates in a direction opposite to the milling element, thus compounding the attritive effect. This not only increases capacity (up to 9,000 pounds per hour on flour) but it decreases required horsepower.

Dielectric Dryer

New Rochelle Tool Corp., Main and Evans St., New Rochelle, N. Y., have evolved a dielectric dryer which has achieved remarkable output and economy in the rayon industry. It occurred to me that this dryer affords a means of rapidly drying heat-sensitive materials at low cost. Under certain conditions of operation these dryers are cheaper to operate than conventional steam-heated dryers. I don't know as yet whether the company makes any units small enough for our industry. But I am looking into it and will report further.

High-Speed Carton Coder

Adolph Gottscho, Inc., Hillside 5, New Jersey, has introduced a machine that imprints folding cartons in the flat, at speeds up to 350 per minute. Magazine-fed and foot-pedal controlled, the Cartoncoda imprints code dates, lot, or control numbers in any location on the carton surface, and handles almost any shape carton from ¾″ x 2″ to 8″ x 12″.

is *Sterilization* a factor in your Product or Process?

Because much of the initial research on gas (ethylene oxide) sterilization originated at American Sterilizer, growing numbers of AMSCO-developed installations have been serving production and processing industries for more than eight years.

Here, as in the traditional Pressure Steam or Dry Heat methods, the American Sterilizer Company offers the world's largest accumulation of facilities, experience and research data on the broad subject of sterilization.

We have a complete range of techniques and automatically controlled equipment for standard or special installations . . . for laboratory, pilot plant or production application. Experimental and pilot plant facilities are available through our Research Department . . . and engineers of our Scientific Division are "on call" for consultation on such matters as production processes, techniques or packaging materials related to sterilization.

GAS

PRESSURE STEAM

DRY HEAT

If any sterilizing process is or should be a factor in your product . . . outline your problem to us. We can help you!

SCIENTIFIC DIVISION

AMERICAN STERILIZER
ERIE • PENNSYLVANIA

SCC ANNUAL MEETING

(*Continued from page 39*)

readily soluble in water, forms clear neutral solutions, and is highly stable in both solid and solution form.

Phosphomannan is a new phosphorylated mannan produced from glucose by a new yeast, *Hansenula holstii*, NRRL Y-2448. The polymer of the sugar mannose carries chemically combined phosphate groups and is different from any polysaccharide previously known. The major components are mannose, pyrophosphate, and potassium in the approximate ratio of 10:1:2.

Phosphomannan is produced as a white, slightly hygroscopic powder that dissolves readily in water. Solutions are clear and thixotropic and at concentrations above 1 per cent have gel-like aspects. Viscosities of the 1 and 1.5 per cent solutions are comparable with those of some of the commercial gums. It complexes readily with borax to give a cohesive gel that does not adhere to glass. Now under development are potential uses in hand lotions, paper, pharmaceuticals, textiles, drilling muds, and food products.

A new product, Polysaccharide B-1459 is a high-molecular weight heteropolysaccharide produced from glucose by the bacterium, *Xanthomonas campestris*, NRRL B-1459. Major components are mannose, glucose, potassium glucuronate, and acetyl in the approximate molar ratio of 2:1:1:1.

The gum is a soft, bulky powder slightly colored by pigment from the culture. The solid swells in water and dissolves to form homogeneous, opalescent, pseudo-plastic solutions that set to a soft gel when cold. Solutions increase in viscosity in the presence of salt and are stable even when heated. Borax has practically no effect on the viscosity. Its unusual properties would indicate general and specialty applications in fields such as foods, pharmaceuticals, and petroleum.

Using modified semi-micro methods for the determination of hexosamine, hydroxyproline and nitrogen, the effects of croton oil-induced injuries in rat skin has been studied by *J. C. Houck and R. A. Jacob*. The results indicate that there is a mobilization of collagen in the skin producing as much as a 70 per cent reduction in the collagen concentration at the site of injury, this reduction being paralleled by a general reduction up to 15 per cent of the concentration of collagen in the uninjured skin. There is no equivalent "systemic" response with regard to hexosamine or nitrogen. Quantitative data exists to indicate that this "systemic" response to injuries of varying intensity is due to the almost total loss of the soluble collagen fraction of the uninjured tissue.

The authors believe that the "systemic" response to local inflammation involves a neuro-humoral activation of a precurser of a collagenolytic enzyme in the skin. As a consequence of the activity of this enzyme, the soluble collagens are rendered more soluble. This solubilized collagen disappears from the skin by way of lymphatic drainage and, since it does not appear in the circulation, it must be sequestered by the reticulo endothelial system.

KEFAUVER: ACT I

(*Continued from page 34*)

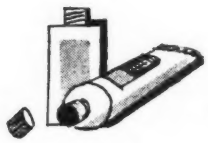
tion, two nonprofit organizations with a combined membership of about 250,000 men and women 55 years of age and older. In an attempt to provide cheaper drugs for their members, the two associations set up a direct-mail service selling drugs at discount prices. Two pharmacies were established to fill orders —one in California and the other in Washington, D. C. The California outlet was ordered out of business last October by the California Board of Pharmacy, because it violated the State's fair trade law. The Washington outlet, known as the Retired Persons Pharmacy, has been operated for the associations by Neustat Drug Stores of Poughkeepsie, N. Y.

Dr. Andrus said the associations had met with "great consideration and thoughtful cooperation" from most of the companies, the exceptions being Parke, Davis; Lederle; and The Wm. S. Merrell Company, A Parke, Davis official in Detroit said that the Neustat Company can purchase these products from wholesalers at the same prices as when bought directly. Neustat President William Dorfman said that for many Parke, Davis products such as vitamins he must pay a 15 per cent markup over direct prices. He admitted there was no price difference in buying specialties such as antibiotics, which are sold on prescription.

An official of another drug manufacturing house, not represented at the hearing, explained that the difficulty involved in this kind of selling is that abuses might arise and that the retail drug trade generally is strongly opposed to it. Furthermore the general retail trade will strongly suspect that abuses exist no matter how strong are the assurances given them by the manufacturers. Under such circumstances, the manufacturer is bound to suffer at the hands of the general retail trade.

The second class of prescription drug products to be investigated by the Subcommittee is that of tranquilizers, starting January 21. There are upward of 30 pharmaceutical houses offering these products, but relatively few leading ones who pioneered in this field.

Of a total of $70 million spent by the Defense Department for medicines and drugs of all kinds, the Defense Department expects to spend one million dollars for tranquilizers during the current fiscal year. The tranquilizers are used for servicemen, and dependents in hospitals, at their homes and elsewhere.



Advancing Therapy

Oleandomycin

Comparative studies of different antibiotics, with the object of obtaining data regarding their relative efficacy in the treatment of particular infections, are extraordinarily difficult and depend, ultimately, on the performance of carefully controlled clinical trials. When, however, different chemical modifications of one drug are available for study, the most suitable form of this agent for clinical use may frequently be ascertained by comparative laboratory determinations of absorption, blood levels, and excretion.

The macrolide antibiotic, oleandomycin, was first described by Sobin et al, in 1954, and was recovered from cultures of *Streptomyces antibioticus* as the hydrochloride salt. Chemical studies since that time have made available for clinical study three further forms of this agent, namely, oleandomycin base, the phosphate salt, and a new ester, triacetyloleandomycin.

Triacetyloleandomycin has been shown in vitro to possess less than half of the activity of the parent compound. In vivo, it apparently undergoes a process of deacetylation, leading ultimately to oleandomycin. The method of bioassay used in this study measured not total oleandomycin but biological activity expressed as oleandomycin base. Thus the proportion of the drug in blood and urine, which is still fully or partially acetylated, would significantly influence the values obtained.

High blood levels need not necessarily imply high therapeutic effectiveness. They may indeed reflect only that the agent penetrates poorly into the tissues, as appears to be the case with novobiocin. Useful comparisons of unrelated agents, which may differ in their ability to penetrate and act in infected tissue, cannot be made in terms of blood levels.

The comparative data reported by N. A. Hinton and D. L. Wilson (*Antibiotics and Chemother.* 9: 667, 1959) are concerned with three modified forms of the same agent. The larger amount absorbed and the higher blood levels observed after triacetyloleandomycin administration may be interpreted with some confidence as evidence that this is the most efficient form of oleandomycin presently available.

Furoxone for Diarrhea

A new chemotherapeutic agent, furazolidone ("furoxone"), has been suggested for the treatment of gastro-intestinal infections. It is one of the nitrofurans derivatives, and the reports of its effects *in vitro* have shown that it is active against a wide variety of organisms. Preliminary clinical trials have already shown that it is effective against, and does not produce resistance in, the organisms commonly encountered in infection of the gut. Furazolidone is bactericidal in low concentrations and has not predisposed to monilial and staphylococcal overgrowth in the feces. Its effectivity is not apparently inhibited by the presence of mucus, pus, or organic matter, and this is a great advantage in the treatment of enteritis

In the latter part of 1958, 58 patients suffering from gastro-intestinal disease were treated with furazolidone by A. Massa (*Brit. Med. J.* 1959, p. 1064), 54 were restored to normal within a week of being treated. The rate of cure for all the patients was most satisfactory and compared favorably with the results previously obtained with antibiotics and sulphonamides

Twelve patients suffering from salmonella infection responded most promptly to treatment. Nine patients with shigella infections were passing characteristic dysenteric stools when treatment was begun, and a gratifying response was noted within 8 to 10 hours of beginning therapy.

It is interesting that seven patients suffering from *G. lamblia* infection responded most satisfactorily to furazolidone after other measures had failed. The four patients suffering from *E. histolytica* infection responded satisfactorily to the treatment, but it is, however, most common to find that in cases of amebiasis a superimposed infection with a dysentery-producing organism is present. It is clear that furazolidone will readily control the superimposed infections in amoeba-infested patients.

The side-effects of treatment with furazolidone are said to be nausea and vomiting. It is very difficult to know how serious these may be, because most patients presented initially with nausea and vomiting as symptoms of the infection. Only one patient was unable to take the tablets, but none of the others complained of any untoward effects which could be attributed to the drug in question.

Antitumor Psicofuranine

The isolation and characterization of a new antibiotic, psicofuranine, or 6 - amino - 9 *D* - psicofuranosylpurine, from *Streptomyces hygroscopicus* var. *decoyicus* have been described by Eble et al, and its structure has been determined by Schroeder and Hoeksema.

Psicofuranine was effective in increasing the number of survivors and tumor regressions in rats bearing either Walker adenocarcinoma, Murphy-Sturm lymphosarcoma, Jensen sarcoma, or Guerin tumor according to J. S. Evans and J. E. Gray (*Antibiotics and Chemother.* 9: 670,

1959). It was active when given orally to rats with either recently transplanted or established tumors.

No activity was shown in mice with either the ascitic or solid forms of Ehrlich carcinoma and Sarcoma 180 or with leukemia L-1210, and spontaneous mammary adenocarcinomas under the conditions used. It was inactive in preliminary tests against an avian lymphoid tumor of viral etiology (Olson).

Psicofuramine has a relatively low order of toxicity, as indicated by acute LD_{50} values in the mouse and rat and subacute toxicity studies (28 day) in rats and dogs.

Carisoprodol

N-isopropyl-2-methyl-2-propyl-1,3-propanediol dicarbamate, called carisoprodol or Soma, although chemically related to meprobamate, differs from it considerably in its pharmacological properties. Carisoprodol relieves certain types of experimentally produced pain. When pain is produced in animals by injecting an irritant substance into a joint, carisoprodol in doses that do not produce muscular relaxation will relieve pain produced by manipulation of the joint. This effect is of particular interest because carisoprodol is devoid of antiinflammatory action. Carisoprodol is also devoid of significant antipyretic action. For these reasons the mode of action of carisoprodol must be different from that of aspirin, phenylbutazone and other non-narcotic analgesics. Carisoprodol also differs from morphine and other narcotics in not slowing the reaction time of the various withdrawal reflexes commonly used in the evaluation of these substances. Thus, when evaluated by the hot plate technique, it will not prolong the period of time for which animals are able to tolerate the heat. When carisoprodol is given jointly with codeine or another narcotic it will significantly reduce the amount of codeine required to produce analgesia.

The muscle relaxant properties of carisoprodol are also quite different from those of meprobamate and other muscle relaxants. Carisoprodol is much more powerful than other muscle relaxants in relaxing decerebrate rigidity. At the same time carisoprodol lacks significant antagonistic properties to the convulsant and lethal effects of strychnine.

Carisoprodol has a depressant action on the reticular formation and appears to have some selectivity in suppressing arousal produced by painful stimuli more than arousal produced by sound or touch. Thus it differs from meprobamate which does not depress the reticular formation and does not interfere with arousal. Carisoprodol causes synchronization of the brain wave patterns but does not produce sleepiness or behavioral changes in doses producing these electroencephalographic changes. In this respect the drug appears similar to atropine. —Frank M. Berger, N. Y. Acad. Sci. conference on relief of pain, Dec. 4, 1959.

Salicylate Pharmacology

Recent studies in patients have shown that acetylsalicylic acid compares favorably with codeine as an analgesic. In large doses the respiration is stimulated as it is by the injection of small doses into central nervous system fluids. This hyperventilation produces a primary alkalosis with marked disturbances in acid-base balance. Salicylates will reduce the susceptibility of animals to anaphylactic shock and inhibit the phenomenon of local tissue reactivity but the relation of this to their therapeutic action is uncertain.

Large doses produce pituitary-adrenal stimulation while ordinary doses hasten the removal of plasma corticosteroids. Salicylates uncouple oxidative phosphorylation, oxygen consumption is increased, brain glycolysis is inhibited and acetate incorporation into liver glycogen is blocked. In diabetes salicylates may abolish the glycosuria, lower the blood glucose and there may be clinical improvement. Protein catabolism is markedly increased with a reduction in cellular water. The increased metabolism many induce the respiratory stimulation and the cellular dehydration may be related to the anti-inflammatory effect.

Salicylates are readily absorbed from the intact skin. Absorption occurs from the stomach, being faster at high acidities and more rapid for salicylate than for acetylsalicylate. Absorption from the small intestine is quite rapid, presumably in the unionized form. The plasma concentrations are higher than would be expected because of binding to the albumin fraction. Penetration of salicylate to the brain is rapid but the concentrations are approximately one-tenth those in the plasma.

Acetylsalicylic acid is hydrolyzed readily by enzymes in most tissues. Salicylate is conjugated with glycine or with glucuronic acid to form both a phenolic and an acyl glucuronide. Conjugation occurs in a number of tissues. A small amount in man is oxidized to gentisic acid.—Paul K. Smith, N. Y. Acad. Sci. conference on relief of pain, December 4, 1959.

Chlorpropamide

Chropropamide was given to 126 diabetic patients, and in 89 satisfactory diabetic control was produced, according to D. Jackson and W. Oakley (*The Lancet* 1959, p. 752).

Chlorpropamide has a greater range of activity than tolbutamide and is effective in cases which relapse on tolbutamide therapy. The incidence of toxic effects is low when the maximum dose does not exceed 375 mg. daily. The patient's age and the duration of diabetes had no bearing on the response to chlorpropamide in this series.

Ferrous Fumarate

All of 55 patients suffering from untreated iron-deficiency anemia and forming the main series in this investigation responded well to ferrous fumarate, 200 mg. (one tablet) three times daily according to H. T. Swan and G. H. Joivett (*Brit. Med. J.* 1959, p. 782). Nine other patients were give ferrous fumarate for reasons described.

Of the 63 patients who responded to ferrous fumarate, 2 (3 per cent) complained of mild epigastric discomfort for 10 days. The remaining patient, who did not respond and who had presumptive iron malabsorption, had more marked gastric symptoms. Eight patients giving a history of alimentary disorder when taking other iron preparations accepted ferrous fumarate without a symptom. Four patients suffering from post-gastrectomy iron-deficiency anemia are described separately. Two of them responded very slowly to treatment.

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Perfumer's Shelf

Pavonia Odorata Oil

The plant of *Pavonia odorata* Willd. belongs to the family of Malvaceae and is indigenous to India. The herb and the roots in particular have a musk-like aromatic odor. The roots are regarded in the Indian system of medicine as cooling, demulcent, carminative diaphoretic and diuretic. They are prescribed as astringent and tonic in combination with other similar medicines in fever, inflammation, haemorrhage from internal organs and dysentery.

An unpleasant smelling green colored essential oil was obtained by K. K. Baslas (*P. & E.O.R.* 50: 896, 1959) by steam distillation of the dried roots in 0.5 per cent yield. The oil possesses the following properties: d^{30}, 0.9345; $(\alpha)^{30}_{D}$, — 15°8″; n^{30}_{D}, 1.4612; acid value 310 and ester value 31.

The high acid value of the oil indicated the presence of a large percentage of acids which were subsequently removed by treating the oil with a saturated solution of sodium carbonate and extracting the resulting solution with ether. After drying the etheral layer, the solvent was evaporated, when a green oily liquid was left which possessed a pleasant odor quite unlike that of the oil.

The aqueous layer on acidification with dilute sulfuric acid yielded an oily liquid which possessed a very offensive smell.

From the odor, boiling point and other physical properties the liquid was suspected to be isovaleric acid which was confirmed by preparing the *p*-toluidide and the anilide.

The green oily liquid left after the removal of the acidic portion was chromatographed. A deep colored green liquid was obtained. The properties of this substance, though they resemble slightly that of chamazulene, are not identical with it.

The residual brownish liquid left after chromatographic examination was distilled on a water bath when an offensive smelling liquid distilled. This liquid was identified as isovaleraldehyde.

The remainder of the above liquid was distilled under vacuum.

Fraction I contains a terpene hydrocarbon. From the boiling point of the terpene, melting point of the nitrosite and maleic anhydride adduct the presence of alpha-terpinene is indicated but the lack of formation of a solid dihydrochloride does not confirm this conclusion.

Fraction II (*a*) responded to the color test of aromadendrene which was subsequently confirmed by preparing aromadendrene glycol, aromadendrone, and its semicarbazone.

Fraction II (*b*) on dehydrogenation forms guazulene. On being treated with bromine in acetic acid it gives a strong violet color like that of aromadendrene but soon changes to greyish green. It absorbs perbenzoic acid equivalent to one double bond. Thus the fraction is found to contain a new tricyclic sesquiterpene which can be named *Pavonene*.

The viscous residue deposited, on cooling, a brownish solid. On dehydrogenation with sulfur guazulene is obtained. It forms a phenyl urethane m.p. 190-192° and absorbs perbenzoic acid equivalent to one double bond. The fraction thus appears to contain an unknown sesquiterpene alcohol which may be named *Pavonenol*.

Aroma Rama

Rhodia, Inc., was approached by Charles Weiss, creator of the "Aroma Rama" process, and the collaboration is now available for appraisal at the DeMille Theater in New York. A travelogue of modern China, "Behind the Great Wall," is embellished with odor effects to support an illusion of reality of what is seen on the screen; this movie may well be a foretaste of standard motion pictures more or less odorized to enhance moods and underline situations.

Aromas are introduced into the atmosphere of the movie theater in response to a triggering mechanism fixed on the film itself. Rhodia's main problem was to make the aromas as realistic as possible; to make them at workable concentrations in an aerosol medium; to make formulas that evaporated very quickly; to assure compatibility between successive odors; to assist in the selection of the appropriate odor for a given scene. Market surveys were initiated to assure acceptability of the chosen odors by the general public. Odors used in the showing of the motion picture include orange, oriental street odor, incense, river odor, duck odor, tiger odor, grass, barnyard, various flowers, dock odor, Chinese cooking (soya sauce and almond cake), wine scent, balsamic pine, tea, explosion odor, etc.

Odors are dispersed as aerosols by means of propellants in odor to attain high concentrations in minimum time. Odors are especially formulated for minimum permanence. Since about 25 per cent of the air is replaced during each air-conditioning cycle, the recycled air is treated by an electrical precipitator to remove virtually all of the residual aroma. The installation is not expensive and wide adoption of the process is anticipated.

Aerosol Perfumes

P. H. Wittens (*P.&E.O.R.* 50: 913, 1959) investigated the chemical changes that take place in a system based upon propellant, oxygen, water, ethyl alcohol, and container material. In aerosols containing alcohol and the propellants 11 and 12, atmospheric oxygen promotes the

formation of acid as well as aldehyde, but the exclusion of oxygen alone will not completely prevent the process. The complete absence of water almost completely represses aldehyde formation, but some acid is still formed. In aerosols containing propellants 11 and 12 along with alcohol, the aldehyde may condense, in the presence of acid and metal catalyst, to form unsaturated condensation products which can cause a "corrosion odor."

In the presence of aromatic chemicals, other condensations and esterifications can take place, to cause drastic changes in the nature of the perfume. These changes may in fact take place before corrosion sets in, with degradation of quality. Air should therefore be removed or replaced by an inert gas in aerosol filling.

Hydroxycitronellal

Hydroxycitronellal, according to H. K. Thomas (*Dragoco Report*, December 1959, p. 225), is a synthetic aromatic made by the hydration of citronellal. The process is theoretically simple, but practically difficult, since the product must contain none of the by-products which affect its odor. The aromatic is a clear, colorless, rather viscous liquid with a sweet and flowery odor of great persistence. Its odor resembles that of lily of the valley to a considerable extent. Like all aldehydes, hydroxycitronellal is sensitive to free alkali and is susceptible to oxidation. It should be stored in a cool, dark place in filled bottles. It will not discolor compounds. It may be used successfully as a base in synthetic flower oils such as lily of the valley, lime blossoms, lilac, lily, hyacinth, jasmin, narcissus and cyclamen.

Oils from Woods

Mexican linaloe oil is obtained from Mexican linaloe wood by steam distillation. Its chief ingredient in linalol, especially used for floral and fantasy compositions such as lily of the valley, lilac, etc. It is stable in soaps. The acetate is derived from the synthetic alcohol and is used in synthetic bergamots. The most valued linaloe oil is the Cayenne oil, produced from trees from French Guiana from Cayenne linaloe wood and containing more than 80 per cent of *d*-linalol.

There are two sandalwood oils, the East Indian and the West Indian. The latter oil is made from the old yellow heartwood of *Santalum album*, freed from bark, by distillation. The chief ingredient of the oil is santalol, to the extent of about 90 per cent. The East Indian oil is much more expensive and comes from the wood of *Amyris balsamifera*. Sandalwood oil is experiencing a comeback in perfumery, especially in men's compositions.

Guaiacwood oil is obtained in 5 to 6 per cent yield by distillation. It has a pleasant rose-like odor and is used in Tea rose compounds. It is a good fixative and is used in soap perfuming.

Hans Schwarz, *Seif.-Ole-Fette-Wachse* 85: 744, 1959.

Cycloserine

Cycloserine, first isolated in 1954 as a fermentation product of *Streptomyces orchidaceus* has been extensively investigated in the treatment of tuberculosis. Toxicity in patients given large doses for prolonged periods is the major disadvantage of such therapy. Nevertheless, lower oral dosage for short periods is virtually non-toxic provided renal function is good. Under these circumstances much higher urine than plasma concentrations are achieved. Cycloserine has therefore been used to a limited extent, with encouraging results, in patients suffering from infections of the urinary tract caused by a variety of organisms. *In vitro* studies have also suggested that concentrations of cycloserine sufficient to inhibit the growth of some strains of coliform organisms are attainable in human urine.

Five patients with severe urinary infection due to *E. coli*, three of whom were diabetic subjects, were treated by J. Mc C. Murdock et al. (*Brit. Med. J.* 1959, p. 1055) with cycloserine for 14 days. Complete clinical and bacteriological remission was achieved, without subsequent relapse during a follow-up period of from two to seven months.

Mild toxicity, encountered in one patient with impaired renal function, did not interfere with treatment.

Pain Sensitivity

A study of 403 Australians of European stock by P. R. N. Sutton (*Nature:* 184, 122, 1959) has shown an association between the color of a subject's eyes and his reaction to pain caused by the preparation of dental cavities for filling.

Thirteen per cent of the 403 subjects required the injection of a local analgesic for cavity preparation. Among the various classifications as to eye coloring, injections were required as follows: none of the subjects with blue eyes; 2 per cent of those with greyish-blue or greenish-grey eyes; 13 per cent of those with greyish-green, green, or hazel eyes; 30 per cent of those with light brown or brown eyes; more than 53 per cent of those with dark brown eyes.

A test of the reproducibility of these observations was satisfactory in a reassessment of 136 of the subjects at one to four weeks after the original examination.

Linalool in Citronella

Linalool is not generally recognized as one of the components of citronella oils. Schimmel & Co. in 1899 reported the presence of a trace (less than 0.01 per cent) of linalool in Ceylon citronella oil but later concluded that the compound in question was not in fact linalool. There appears to be no other reference to this subject in the literature.

By the use of vapor phase chromatography in conjunction with the infra-red spectroscopy, it has now been found by P. L. Williams (*P.&E.O.R.* 50:678, 1959) that Formosa citronella oil contains about 1 per cent of linalool, which has little or no optical activity.

There is no evidence, however, as to whether the linalool is a primary constituent of the oil or whether it is an artifact formed by the isomerization of geraniol during extraction. The lack of optical activity suggests the latter possibility.

Diuretic Comparisons

The diuretic actions of chlorothiazide, hydrochlorothiazide, and hydroflumethiazide have been compared in ten healthy men by D. S. Young et al (*The Lancet* 1959, p. 765).

All three drugs cause diuresis with similar changes in the composition of the urine except the hydrochlorothiazide and hydroflumethiazide are effective in a smaller dose and cause less potassium loss and bicarbonate loss than chlorothiazide.

Industry's Books . . .

Automating the Manufacturing Process, *by George F. Hawley, Director of Development & Engineering, Automation Engineering Laboratory, Inc., 147 pp., Illus., Reinhold Publishing Corp., New York, (1959), cloth,* **$4.95.**

This book helps management and production personnel gain a greater appreciation of the risks encountered in successful automation, while designers and development engineers will find ideas that should minimize their failures. The author presents in practical terms some of the mechanical problems involved in inventing and designing machinery for specific operations, such as assembly of components, packaging of individual products, bottle capping, feeding, and the like. He also spells out some of the pitfalls involved in automation, and discusses in detail the roles of the inventor, design engineer, and production planner. The book's practical approach to complex mechanical problems will appeal to all who are confronted with unnecessarily costly operations.

The Chemical Industry Facts Book, fourth Ed. for 1960-61, *163 pp., paper bound, by Manufacturing Chemists' Association, Inc., 1825 Connecticut Ave., N. W., Washington 9, D. C.*

This Facts Book has been prepared with the hope that it will serve to increase public understanding of the chemical industry and its use of science and technology for human betterment. Contents: Section I—The Chemical Industry in the United States; Section II—How the Chemical Industry Operates; Section III—Chemicals in Everyday Life; and Section IV—Chemicals in the Service of Man.

Organic Reactions Volume 10, *563 pp., Published by John Wiley & Sons, Inc., New York, cloth* **$12.**

This latest addition to a series that began in 1942 continues the purpose of the previous volumes: to present a compilation of all the important synthetic organic chemical reactions. A special chapter in this volume reviews the Michael reaction, and gives over 1,000 references. Other sections concern the coupling of diazonium salts with aliphatic carbon atoms, and the Japp-Klingemann reaction. Each chapter in the series provides a comprehensive survey of a particular reaction and includes a general discussion of method, modifications, examples of applicability, special precautions, a detailed description of the procedure, expected yields, and other pertinent data. Tables have been compiled and are included in each chapter, listing compounds which have been prepared by, or subjected to, the reaction under discussion in that chapter.

British Pharmaceutical Codex 1959, *Published by direction of the Council of the Pharmaceutical Society of Great Britain, 1301 pp., The Pharmaceutical Press, London, cloth,* **70s.**

The first edition of the British Pharmaceutical Codex published in 1907 was intended to provide information on drugs in common use throughout the British Commonwealth, and this has been the aim in preparing the five editions that have followed. The Codex Revision Committee has endeavored to maintain in this, the seventh edition, the high reputation of the Codex as a reference book. The British Pharmaceutical Codex has also become increasingly important as a source of standards for drugs, surgical dressings, and pharmaceutical preparations not included in the British Pharmacopoeia.

Accepted Dental Remedies, 25th Ed., 1960, *212 pp., by authority of the American Dental Association, paper bound,* **$3.**

This is the twenty-fifth edition of a book that has become widely recognized as a handbook of dental therapeutics. As in earlier editions, Accepted Dental Remedies 1960 includes information concerning drugs of recognized value in dentistry, drugs of uncertain status more recently proposed for use by the dentist, and some drugs once employed extensively but now generally regarded as obsolete. Only brands of drugs which the Council has accepted as of demonstrated value in dentistry are listed.

Manual of Skin Diseases, *by Gordon C. Sauer, M.D., Assistant Clinical Professor of Dermatology and Chief of the Section of Dermatology, University of Kansas School of Medicine, 269 pp., Illus., J. B. Lippincott Co., Philadelphia, (1959), cloth,* **$9.75.**

Written to meet the demand for a good short book on dermatology, this fully illustrated text emphasizes the material which students and general practitioners must know for diagnosis and treatment of common skin diseases. The book is divided into two distinct parts. The first section contains chapters on diagnosis and management. The salient points of each disease are outlined—primary and secondary lesions, distribution, general course, prognosis, etc. Where indicated, seasonal incidence, age groups affected, incidence by family and sex, contagiousness or infectiousness, relationship to employment, and laboratory findings are given. Each discussion ends with remarks on differential diagnosis and treatment. The second part is a dictionary-index to the entire field of dermatology, including most of the rare diseases and unusual dermatologic terms. This arrangement permits the first section to be unencumbered by the rare diseases, and provides a comprehensive directory to all dermatology for the more interested student or practitioner.

Organic Syntheses, Volume 39, *114 pp., John Wiley And Sons, Inc., New York,* **$4.**

This is an annual publication of satisfactory methods for the preparation of organic chemicals. This latest volume contains methods for synthesizing approximately 28 organic chemicals.

A Contribution to Western Pennsylvania Pharmacy, *by Edward C., and Thelma C. Reif, 396 pp., University of Pittsburgh Press (1959), cloth,* **$6.**

This book is a history of the Pittsburgh College of Pharmacy from 1878 to 1958. Contents include: Part One—Events which Led to the Founding of a School; Part Two—Affiliation with the Western University of Pennsylvania; Part Three—A School in the University of Pittsburgh; Part Four—Integration with the Health Professions; and Part Five—Appendices.

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Skin Research

Skin Lipids

In recent years there has been increasing appreciation of the metabolic activities that occur in the skin. The concept that the skin may manufacture the complex substances necessary to perform its function is gaining increasing support. In the category of lipids it seems possible that the skin itself synthesizes from other substances the fats necessary for the epidermal "barrier," the protective and emollient surface film and perhaps the precursors of Vitamin D.

Srere, Chaikoff and others reported that in rats the skin was one of the most active extrahepatic sites of sterol synthesis. Nicolaides, Reiss and Langdon incubated slices of a piece of human scalp obtained at operation with C^{14} acetate and after careful separation of the lipid constituents demonstrated incorporation of the C^{14} into sterols, fatty acids and also in sizable amounts into squalene (a precursor of the sterols which does not normally accumulate in other tissues). Later Nicolaides and Rothman incubated epidermis and dermis separately with C^{14} acetate. They concluded that the epidermis was the main site of sterol synthesis in the human skin and that the sebaceous glands synthesized and accumulated squalene.

Studies were undertaken by J. F. Patterson and R. D. Griesemer (*J. Invest. Dermatol.* 33: 281, 1959) to attempt to confirm and extend these observations and to apply, if possible, these methods of study to small (punch-biopsy size) pieces of skin.

Since breast skin was easily available and had high lipogenic activity, it was used for detailed study of many of the parameters and factors involved in lipogenic enzyme activity. Breast skin from 23 subjects has been studied. The incorporation of C^{14} into cholesterol appeared to be about the same in all sites, while squalene and fatty acid synthesis varied considerably, tending to be most active in breast and post-auricular skin.

Epidermis appears to synthesize sterols more readily than dermis, while dermis seems to have the unique abiilty to synthesize and accumulate squalene.

Skin Amino Acids

An investigation into the distribution of amino groups in physiologic and pathologic skin was suggested to B. Potter (*J. Invest Dermatol.* 33: 245, 1959) by recent biochemical and histochemical developments concerning the reagent ninhydrin. The color produced directly by ninhydrin from amino compounds is too faint to be of value in histochemistry. However it has recently been recalled that, besides a direct violet color, an aldehyde is produced by ninhydrin in the same reaction. Quite large amounts of aldehyde are formed in tissue sections in this way and are readily demonstrable by Schiff's reagent. This provides an elegant method for the histochemical demonstration of free amino groups.

In normal skin the nuclei and cytoplasm of the epidermis, hair follicles, sweat glands and ducts and erector pili muscles were quite brightly stained purple. So were the collagen bundles, especially the thicker ones, so that the papillary layer was fainter than the rest of the corium. Sebaceous gland cells, having scanty cytoplasm, did not develop much color. Erythrocytes in the lumen of blood vessels were ninhydrin-Schiff negative and appeared as empty yellowish envelopes. Leukocyte nuclei were colored purple.

In the normal epidermis the corneal layer, squamous cell nuclei and cytoplasm all were stained purple with a uniform intensity. In the hair follicle the hair shaft cortex was not colored; the medulla was purple; the inner root sheath purple. The outer root sheath developed a uniform color in cytoplasm and nuclei of about the same intensity as the surrounding connective tissue. In some sections the upper part of the lower third of the hair and inner root sheath were particularly brightly colored.

The smooth muscle of the erector pili muscles was colored less strongly than the striated bundles of voluntary muscle in the skin, for instance the occipitalis or frontalis of the scalp, which developed a bright purple color.

Psoriasis

The cause of psoriasis is unknown; therefore treatment is based on observation and the knowledge accumulated from clinical experience and experiment according to a review by R. M. B. MacKenna (*Brit. Med.* J. 1959, p. 1244). Recent work indicates that the malady may be associated with some fault in one or more of the enzyme systems of the skin, those concerned with protein metabolism having particularly attracted attention; but the systems presumably are not autonomous, and their activities must be controlled by some higher system. An endocrine factor would be an easy way to explain such known facts as the tendency for the eruption first to appear when the patient is between 8 and 15 years old, the tendency for the rash to clear during pregnancy and relapse soon after parturition, the potent effect of emotional stress in producing on outbreak of psoriasis in susceptible individuals, and so

forth. As yet there is little evidence to support such a hypothesis.

For the sake of convenience the drugs which can be used internally in the treatment of psoriasis will be considered alphabetically.

Aminopterin is one of the group of compounds, known as folic-acid antagonists. It is extremely toxic and can cause a rapid fall in the leucocyte count, alpasia of bone marrow, gastro-intestinal ulceration, alopecia, and dermatitis. However, it can cause improvement in many cases of psoriasis, though, as with all known treatments, the eruption recurs sooner or later. It is only in the most exceptional cases that the remedy should be considered, and expert opinion is strongly biased against its use.

Once widely prescribed, arsenic is now in disfavor. There are four reasons for this: the first is that if given in the stage of efflorescence arsenic may aggravate the eruption; secondly, many cases the drug does not confer benefit; thirdly, multiple cutaneous carcinomata not infrequently develop in later years in patients who either have taken the drug for long periods or have had recourse to it on numerous occasions; fourthly, it may cause hepatitis.

Ruedemann gave 1,000 mcg. of vitamin B_{12} intramuscularly daily for 10-20 days to 34 psoriatic persons. The eruption disappeared from 11, nearly disappeared from 10, and slowly improved in 6. Since then reports have been published in several countries confirming that the treatment is beneficial, even in stubborn cases.

Casabianca claimed good results from the administration of cystine. Fowler's solution was given, and ointments of the traditional type containing oil of cade were used concurrently. This treatment has not been widely acclaimed.

Thiosemicarbazone is a toxic antileprotic drug which can cause anaemia, agranulocytosis, and hepatic dysfunction. Reports on its effects in psoriasis have kept appearing in recent years; a few dermatologists abroad are enthusiastic, but the majority are sceptical.

The chief importance of triamcinolone lies in the fact that for reasons yet unknown it is the only corticosteroid yet introduced which can quickly remove psoriasis in the majority of cases. What seems to have been overlooked is that the relapse rate is extremely high. Shelley and his colleagues believe that the drug should be given only for acute extending psoriasis not controllable by other means, or for very extensive and severe chronic forms of the eruption. Some cases of psoriasis respond very satisfactorily to grenz rays; in others the lesions are aggravated and may spread.

The use of conventional X-rays in psoriasis is becoming increasingly unpopular because of the genetic and other hazards involved. While they may produce rapidly a very beneficial effect when first applied, in most cases the recurrences of the eruption become more resistant, so that the dosage has to be increased, and the hazards are increased.

Ultra-violet rays are of very great importance in the treatment of psoriasis.

The old rules in topical treatment still apply and for the sake of brevity may be stated dogmatically: strong remedies are not to be used when the eruption is efflorescing, for they will aggravate the malady; oily lotion of calcium hydroxide, soft paraffin, hydrophilic ointment *U.S.P.*, perhaps calamine cream, or an ointment made by mixing equal parts of glycerin of starch and salicylic acid ointment *B.P.* are preferable. Do not aggravate psoriasis by over-treatment: the least hazard of this is the production of resistant lesions, the worst the development of exfoliative dermatitis. Ointments containing chrysarobin, dithranol, pyrogallol, or other substances which in a few persons produce violent inflammatory reactions must be used only on small areas at first until the patient's sensitivity to them has been assessed.

There is one new observation: lotions and ointments containing corticosteroids with or without antibiotics serve only to relieve itching; they seldom benefit the psoriasis. There is one exception to this: Jarrett and Spearman in a preliminary report have stated that benefit may follow the frequent application of a preparation made of 0.1 per cent triamcinolone cream containing 12,500 units of water-solubilized vitamin A per gram.

Fundamentally the local treatment of psoriasis still depends on the use of preparations of tar, salicylic acid, mercury, or sulfur. Resorcin and pyrogallol are still employed, but much less frequently; dithranol has won its place in the *British Pharmacopeia*. Chrysarobin is less popular and remains in the *British Pharmaceutical Codex;* its effects are less predictable than those of dithranol, its potency varies from batch to batch, and it has a more deleterious effect on clothing.

As a generalization which applies to the majority of cases, the skin of a psoriatic subject benefits considerably from heliothreapy or from exposure to ultra-violet rays.

It is believed that the beneficial effect of tar in the malady is largely due to its photo-sensitizing effect.

Local inunction can be carried out with tar ointments fortified by the addition of salicylic acid, sulfur, or mercury. It is usually believed that the acid merely acts as a keratolytic and removes scales, but possibly it has some further effect of which little is known. Recent research indicates that the traditional use of sulfur may be scientifically justified, but the use of mercury is based more on tradition than on pharmacology.

Tar Biosone G.A. ointment gives much relief to pruritic psoriasis eruptions. It is available in a greasy and also in a nongreasy form, the antipruritic element presumably being the glycyrrhetinic acid which is incorporated.

Resorcinol with tar is useful in the treatment of stubborn localized patches (some patients react to it).

Pyrogallol is almost forgotten. It has the disadvantage of being black in color, and fell into disfavor because if absorbed from large areas it can be very toxic. However, pyrogallol ointment 5 per cent is useful for small areas.

Chrysarobin and dithranol are so widely known that they will not be considered, except to note that a proprietary preparation, Chrysocreme, which contains 2 per cent chrysarobin, is satisfactory, and patients report that it stains clothing less than they would normally expect. Recently Alphosyl lotion, which contains allantoin 2 per cent and an extract of coal tar 5 per cent in a vanishing-cream base, has become available: its cleanliness in application makes it very acceptable to the patient.

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Cytamines

The report made by P. Rovesti at the Symposium on conditions affecting the capillary system, Lausanne, May 16, 1959, has been reproduced in "Perfumery & Essential Oil Record," vol. 50, p. 705, 1959. The name Cytamine has been given to alkyl and cholesterol esters of amino acids, manufactured by conventional processes, to produce amino acid derivatives with sufficient lipid solubility to improve absorbability by intact skin. The products are said to be highly unstable in air, even as hydrochlorides, and must be preserved in non-aqueous solvents. A number are being investigated, presumably for potential use as skin nutrients and the ethyl ester of histidine was used along with a cutaneous biocatalyst for hair treatment. According to Rovesti, 15 subjects were treated with the preparation for up to 60 days and he concludes "the nutrition and activating action of cytamine on the growth of hair as far as we are concerned has been proved."

Comment: As far as we are concerned, nothing at all has been proved other than that you can get any results you want if you use a small enough group of subjects and treat your results with kindness and consideration. If this so-called scientific work could get past the Board of Editors of "The Journal of Investigative Dermatology" and the "A.M.A. Archives of Dermatology" for publication in those respected journals, then it might be given some credence. Meanwhile I choose to consider it a not very skilful attempt to combine a great deal of promotion with a modicum of idea. KALISH

New American Talc

Whittaker, Clark & Daniels has just announced the availability of a new U.S.P. grade of talc of American origin. Produced by a unique chemical beneficiation process from a deposit recently opened at Alpine, Alabama, the talc conforms to U.S.P. requirements, is extremely white, grit free, soft textured, and has excellent slip. Its reflectance is rated at 92 and it makes a high quality dusting powder. It also possesses superior pressing qualities for tableting and compact powder production and should meet the most exacting requirements in drug and cosmetic formulation.

Rovicote Vitamins

The 'Rovicote' Family—coated, taste-free B-complex vitamins for use in chewable tablets—has been introduced by the Vitamin Division of Hoffmann-La Roche. At the present time there are four members—'Rovicote' Thiamine, 'Rovicote' Riboflavin, 'Rovicote' Pyridoxine and 'Rovicote' Niacinamide; each available as a fine, dry powder.

'Rovicote' vitamins are free from the typical taste and odor of the B vitamins. This is accomplished through the use of a pure, edible, water-resistant coating. The process is the result of several years of intensive investigation to produce vitamins suitable for use in chewable tablets. The coating itself is an inert material which will not affect the manufacturing procedures or the labeling requirements of tablet manufacturers.

According to R. W. Smith, General Manager of the Roche Vitamin Division, "Rovicote' vitamins have no taste of their own. They are compatible with most flavors used in the production of chewable tablets. They will be useful to pharmaceutical manufacturers who have problems making chewable tablets because of the unpleasant taste of the B-complex factors."

Barrier Creams

Barrier creams should possess the following properties. They must:

(1) be insoluble in the liquid against which protection is desired
(2) be non-irritating to the skin; their *p*H value should approximate that of the skin, i.e., between 5.5 and 6.5
(3) be capable of easy application, spread smoothly and rapidly so as to form a continuous film over the skin
(4) be quick drying but retain sufficient elasticity to stand up to manual movements and friction
(5) not make the hands sticky or slippery
(6) be attractive in appearance and pleasant smelling for it is recognized that workers will not use an unattractive preparation no matter how effective it may be
(7) be readily removable from the skin (together with the contaminants they carry) either by soap and water or by special cleansers.

Obviously the production of creams which comply with the foregoing essentials is no simple matter. It involves much research and experimentation. Elaborate tests have been devised but as none of them, so far, simulates the exact behavior of the film in actual use, the final choice between a number of experimental creams must be decided by practical field trials.

There are two main types of general-purpose barrier creams. The first is water-insoluble for use with aqueous solutions of chemicals, dilute acids and alkalis and all types of water-wet solutions. The second, designed to give protection against oils, some solvents, greases, dry chemicals, lime, cement, etc., is itself normally water-soluble. To augment these general-purpose types there are special barrier creams. These include one which is resistant to both water and oil; another is for use when all kinds of solvents are being handled; a third is designed for use when there is contact with strong chemical solutions. A recent development is the inclusion of a silicone to improve durability and resistance to water-wet solutions.
—*Chem. Prod.* 22; 383, 1959.

(*Continued from page 41*)

CTS plate has much better product and atmospheric corrosion resistance, as well as better enameling characteristics than black plate. The chemical treatment deposits a thin passive film of chromium-salt complex on the plate, which gives it its desirable properties. Chemically treated steel has been used spasmodically in the past, but the price differential made it economically unattractive for many uses when tin was available. The American Can Company now has its own chemical treatment process in connection with its coil cutting operations. As a result of improved quality, in recent years, and of economies in production, the use of CTS plate is expected to grow. This plate is not an inferior substitute for tinplate. It is used where its performance is equal to or better than tinplate.

Production of black plate cans with soldered side seams is not too practical on modern, high-speed can-making lines and soldering of CTS plates is an even more difficult problem. At present, these plates are used for cans not requiring soldered side seams. Cemented side seams are adequate for many uses but not for vacuum packing, pressure cans, and processed food products. They are liquid tight at atmospheric pressure, but not absolutely hermetic. Developments toward that goal are well on their way. Cemented side seams have the advantage of permitting all-around lithography and the use of heat-sensitive coatings. They are in wide use today, notably for motor oil, citrus concentrates, and liquid detergents, as well as many small-volume items.

It should be mentioned that many metals have been considered as possible replacements for tin. Nickel, zinc, and aluminum coatings on steel have been tried. Although there is some specialized use of zinc-coated steel and tin-lead plated steel (terne plate), metallic coatings other than tin do not promise to be an important factor in the container industry.

Mechanical Properties of Plate

Plate used for container manufacture falls largely within the thickness range of 0.008 to 0.015 inches. This corresponds to 75 to 135 pounds per base box, the traditional way of expressing plate weight. Within the past few years, because of rising steel costs and competition from other can-making materials, a good deal of emphasis is being placed on the production of lighter gauge plate. Plate weight as low as 55 pounds per base box (0.006 inches thick) is being used in commercial trials for some small containers and even lighter gauges are being considered. These light gauges present serious problems for both the primary producer and the container fabricator, but the problems may not be insurmountable. Within the next few years you may expect to see wider usage of light-gauge steel wherever its performance is adequate.

All plate for container manufacture is made according to definite hardness or temper specifications. Six temper ranges are in use, ranging from T1, which is very soft and is used for severely drawn parts such as spouts and nozzles, to T5 and T6, which are rephosphorized to give them hardness and stiffness. High-temper plates are used where strength is important, such as in ends for pressure cans. Within the last decade a seventh temper designation known as TU has been introduced, which stands for temper universal. This plate is produced by a continuous annealing process instead of the conventional batch or box annealing. As the name implies, TU plate can be used to replace several temper ranges of box-annealed plate. Its virtue lies in that it combines strength characteristics comparable to T5 plate with workability comparable to T3 and T4 in some respects. It does not have high phosphorus content; therefore, it has better resistance to attack by corrosive products. TU plate is being used to the extent that it is available, and additional facilities for its production are planned by the steel mills. This is another step toward improving quality while at the same time simplifying operations.

One of the biggest forward steps in the history of modern can making has been the so-called coil cutting program. We now take plate from the mills in huge coils and do our own inspecting, sorting, chemical treating, and cutting into sheets. Besides producing a substantial saving, this improves versatility and control of quality. The program has now been essentially completed by our company and is being adopted by others. The next logical step in this program is to feed coil stock continuously to coaters, litho presses and can-making machinery. When this becomes a reality, it will effect further economies in can making.

Aluminum

Aluminum is making a strong bid for recognition among rigid containers. Such diverse products as beer, motor oil, grated cheese, frozen food and sardines are packaged in aluminum cans. Aluminum aerosol cans are quite common in Europe and there is some specialized use of aluminum for aerosols in this country. You may have seen advance notices on the impending introduction of a six-ounce aluminum pressure can by American Can Company. This combined usage is very small at present compared to approximately five million tons of steel used annually by the can makers. It is only within the last year that aluminum prices have been able to compete with those of steel for rigid containers. Much faster growth can be expected when aluminum becomes even less costly.

Aluminum has many attractive features: it is about one-third the weight of steel, gauge-for-gauge; it has excellent resistance to atmospheric corrosion; it can be deep-drawn or extruded; there is a limitless

(*Continued on page 117*)

Trade Literature

Aluminum Foil

Kaiser Aluminum & Chemical Sales, Inc., 919 North Michigan Ave., Chicago, Ill., has issued a 234-page hard-cover volume, the first edition, titled Kaiser Aluminum Foil. The cover itself is of foil, coated and lithographed in five colors. The contents discuss in considerable detail aluminum foil products and its end uses, designing for aluminum foil, and foil's production, properties, availability, and basic converting processes. The book is illustrated with photographs, line drawings and tables, and contains a glossary and an index.

Health Insurance Data

The Health Insurance Institute, 488 Madison Ave., New York City 22, has published Source Boom of Health Insurance Data, an 80-page booklet and the first issue of a reference guide to the growth of health insurance through voluntary insuring organizations in the U. S. A. Copies are available for 25 cents.

Dragoco Report

Dragoco, Gerberding & Co., G. m. b. H., Holzminden, West Germany, has released the Dragoco Report, Monthly Information Service No. 11. The 17-page pamphlet contains articles on the history of perfumery and the scent of the genuine cyclamen, information for perfumers, and an enclosure, a price report.

Biochemicals

Subjet Laboratories, Inc., 119 West 57th St., New York City 19, has issued a 28-page catalogue of biochemicals and radiochemicals, which contains not only a price-list but also a series of tables for use in routine and research work.

Colors on Containers

Stone Container Corporation, Chicago, Ill., has released a pamphlet, How To Select Customer-Catching Colors on Corrugated Containers, which is written by Howard Ketcham in cartoon style, and printed in color.

Synthetic Organic Chemicals

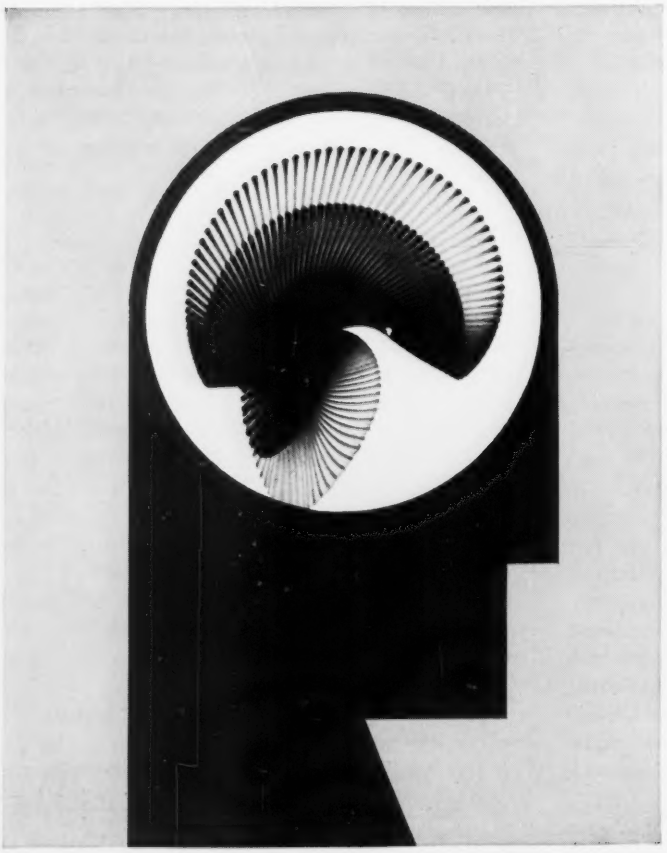
The Union Carbide Chemicals Company, 30 East 42nd St., New York City 17, has issued its 1960 edition of Physical Properties: Synthetic Organic Chemicals. In 28 pages it describes more than 400 synthetic organic chemicals, with information on applications, shipping.

Industrial Wastes

An industry bulletin, Instrumentation for Treatment of Industrial Wastes, which is a compilation of reprints of articles from Instrumentation magazine, has been published by Minneapolis-Honeywell Regulator Co., Wayne and Windrim Aves., Philadelphia 44, Penna. It offers case histories of how instruments are applied to industrial waste treatment systems to prevent stream pollution. In 24 pages, illustrated, B 97-2.

Marking Machinery

A new catalog describing its complete line of marking, dating, coding, and imprinting machines has been released by Industrial Marking Equipment Company, Inc., 655 Berriman St., Brooklyn, N. Y.



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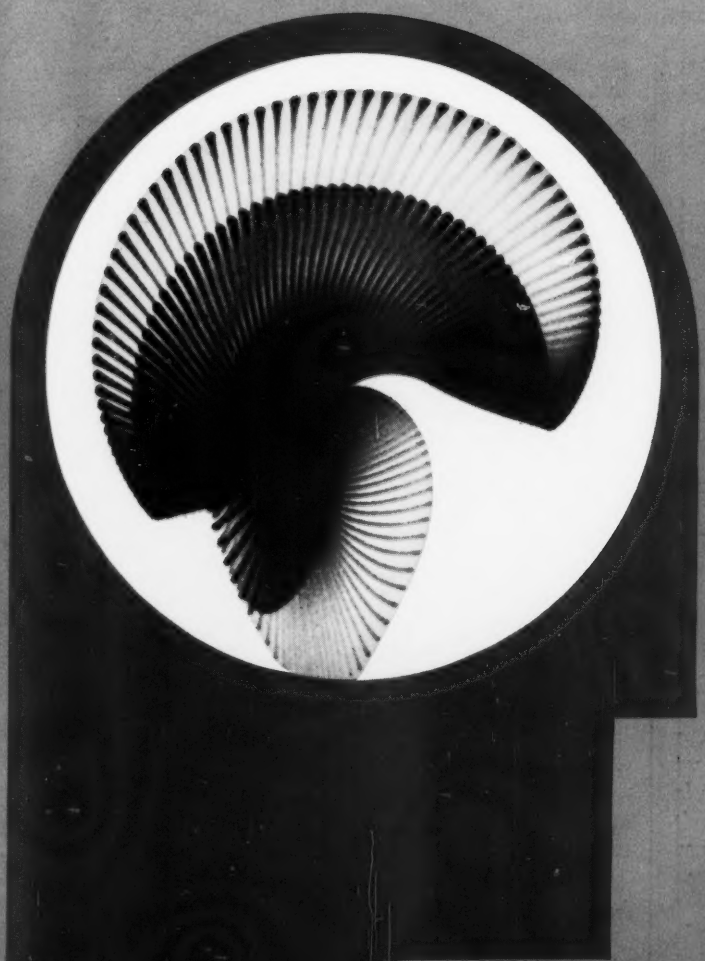

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AMERCHOL PARK . . . EDISON, N. J.

(Continued from page 35)

acid treatment is probably sufficient to prevent further injury from shampooing between bleach treatments. Rinsing the hair with vinegar or lemon juice after washing has an additional scientific justification in the case of bleached hair, since the acidity of these rinses is in the effective *p*H range.

James A. Rogers, Jr. reported on "Instrumental Evaluation of Citronella Oils and Palmarosa Oil—Geraniol, Citronellol, and Other Constituents." Vapor-phase chromatography has replaced infrared methods to a large extent as the quantitative tool; use of a column of large diameter separates the components of large samples for qualitative identification. The infrared spectrometer is still the most versatile qualitative instrument for the over-all structural identification of mixtures, complementing vapor-phase chromatography. Ultraviolet spectrophotometry provides an excellent tool for the quantitative determination of aromatics, carbonyls, unsaturates, etc., especially for nonvolatile substances. Mass spectrometry gives excellent qualitative results with fairly pure volatile materials, but its use with mixtures is limited. Nuclear magnetic resonance is applicable primarily to pure liquids for structure determination. The use of instrumental analysis to evaluate citronella and palmarosa oils has resulted in the isolation of new components and confirmation of older methods. Seventeen components have been identified in Ceylon citronella, nine in Java citronella, and eight in palmarosa.

S. H. Rubin, L. Magid, and J. Scheiner discussed "Panthenol in Cosmetics." This is an alcohol analog of pantothenic acid, a vitamin of the B complex essential for the growth and normal maintenance of the skin and hair. Panthenol after topical application is converted into the active acid form and has been used successfully as a healing agent in the treatment of a variety of skin disorders. As panthenol penetrates the skin and is harmless, its incorporation in creams, lipsticks, lotions, and hair preparations is being suggested. It can be made part of standard cosmetic formulations by maintaining *p*H conditions for optimum stability.

Dr. H. J. Prebluda and Dr. I. I. Lubowe presented a paper on "Methionine in Cosmetics and Pharmaceuticals," in which they pointed out that methionine occupies a significant place among essential amino acids because of its important polyfunctional properties. Its absorption through the skin suggests greater usefulness in topical therapy, and the amino acid is nontoxic.

Drs. Donald A. M. Mackay, David A. Lang, and Murray Berdick discussed "The Objective Measurement of Odor: III. Breath Odor and Deodorization." Instrumental advances made possible by the recent development of ionization detectors have greatly facilitated approaches to the measurement of volatiles on breath. Details were given for experimental tech-

niques using radium and tritium as ionizing sources. The theory and practice of enrichment columns were described, along with their limitations. Examples were given of the analyses of volatiles on the breath before and after eating, drinking, and smoking.

Dr. Ernst T. Theimer, in "Recent Advances in Instrumental Examination of Fragrance Materials," discussed the application of various spectro-analytical techniques, such as ultraviolet, infrared, mass, and nuclear magnetic resonance spectrometry, and the separation technique of vapor-phase chromatography to the structure-proof of a number of fragrance materials. Special emphasis was given to a discussion of the data available from a careful analysis of nuclear magnetic resonance spectra of some terpene alcohols.

HIDDEN COSTS

(*Continued from page 37*)

ment is not being properly set up. Machines should be checked to see whether they are out of production longer than is necessary because of an inadequate set-up program. A more adequate supply of parts might help in getting greater use from equipment. Another item to check in this area is unnecessary material handling. Are straight-line operations being employed as much as possible? Are packaging lines supplied without delay or hold-up? Are chutes and conveyors used intelligently to cut handling costs? Are packaging operations which could be done more economically internally being farmed out?

In the shipping department many hidden costs lurk in the handling of materials. Depending on the type of distribution involved, improvements can be made by using order-assembly conveyors and other material handling equipment. Automatic case-stencilling machines, prepared address labels, prepared bills of lading, postage meters, etc., are all money savers. Shipping costs must be constantly surveyed in the interest of economy. The I.B.M. type of order-writing machines in some types of operations are big time and money savers.

Several other areas should be examined. The use of fancy and expensive individual cartons should be reviewed, especially for prescription items; the ultimate user never sees the carton. The retail pharmacist often throws it out immediately because it takes up too much room—net result, a waste of the manufacturer's money.

Again, promotional pieces may carry too many frills. I doubt that the average doctor examines these to see whether they are engraved, or whether they have been printed on super-deluxe bond paper.

In planning and scheduling, unnecessary changes are both expensive and aggravating. This operation should be carefully examined to be sure that changes are held to a minimum. Repercussions of changes

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made by the planning department affect almost every operation in the manufacturing area. The longest possible runs should be scheduled so that the number required annually can be held to a minimum, thereby reducing the number of machine set-ups, paper work, etc. We have a policy whereby stable, slower-moving items are run once every six months and, in some cases, once a year. This effects economy in planning, purchasing, machine set-ups, paper work, etc. Wherever practical, bottles sizes should be grouped, to cut down equipment changeovers. The benefits derived from standardization of containers are obvious.

The use of shifts in pharmaceutical operations is a very real way to reduce costs. Large capital expenditures can be held to a minimum or eliminated entirely by getting more use out of existing equipment. As you know, this won't do your overhead any harm.

It is almost needless to say that preventative maintenance will materially reduce down-time, an insidious hidden cost. The application of modern maintenance tools and materials should be investigated, for instance, automatic concrete coring devices, gun-type stud drivers, oiless bearings, floor sweepers and scrubbers, and wall-cleaning equipment. Tubing should be used in place of threaded pipe wherever practical. Materials that require no painting, such as aluminum, stainless steel, and plastics should be considered. Unbreakable plexi-glass might be used in areas where regular window glass is frequently broken or cracked. Lubrication programs should be evaluated. I think at times we lubricate more than is necessary. A simple thing like not having enough electrical outlets in areas where portable equipment is used, can be a source of considerable lost time. Accurate records of maintenance costs should be kept, mainly to be certain that maintenance money isn't wasted on worn-out equipment, which is apt to break down and cause expensive delays in processing and packaging operations.

The apparently simple things like the misuse of electricity, compressed air, heat, water, and steam should be constantly serviced to eliminate waste. Steam condensate might be introduced for the manufacture of distilled water and also for making hot water. Self-closing faucets should be used where practical. Leaky valves should and can be eliminated. Long-lasting neoprene faucet washers are practically leak-proof. The use of condenser water should be controlled automatically.

A periodic review of control practices will aid in uncovering hidden costs. Any unnecessary analytical tests of raw materials, intermediates, and final products should be eliminated, although adding tests, especially in the case of intermediates, may reduce the number of rejections of a finished product. Use of analytical instruments wherever possible will materially reduce man hours. An adequate testing program should be maintained for packaging and raw

materials, so that defective items do not reach the packaging lines or the processing department to cause unnecessary delays and sometimes unacceptable finished products.

Other hidden costs may be involved in attempting to recover or rework rejected materials or batches. Sometimes the cost is greater than the salvage value. Trying to use up obsolete materials can also be expensive unless properly controlled. Storing obsolete equipment and/or materials for a long period of time, in the hope of finding a use for them later, can be a hidden cost.

Continual review of waste reports is very effective in eliminating hidden costs.

Overtime can become an insidious habit leading to a hidden cost.

Pilferage is another culprit of which we must always beware.

It goes without saying that excessive paper work and unnecessary reports are one of the main sources of hidden costs. These are terrific time wasters. Reports should be constantly reviewed and eliminated wherever possible.

In the supervisory and managerial area, hidden costs result from unnecessary and/or overly populated meetings. Conferences and meetings are valuable management tools. However, we should be constantly on the alert to see that they are not misused.

I would be remiss if I did not mention that great American institution, the coffee break. In the abuse of this practice lies one of our biggest dollar losses. And last but by no means least is the hidden cost of excessive lateness and absenteeism. Although volumes have been written on this subject, it won't do any harm to mention that absenteeism and abuse of the coffee break must be constant concerns. At SK&F we are now using coffee carts instead of allowing people to go to the cafeteria. This has reduced the time loss considerably.

One over-all important point regarding hidden costs is that, no matter what area or operation is involved, improper planning and inadequate preparations always result in unnecessary costs. A layout in which serious consideration has been given to the efficient flow of materials and the simplification of housekeeping contributes immensely to low operating costs.

I am sure many items have been omitted. However, I hope my examples will serve as a stimulus to all those interested in eliminating hidden costs wherever they exist.

MEASURING BREATH

(*Continued from page 48*)

separation column can be made in a number of ways, but the way adopted in treatment of breath volatiles, since the instrument design readily allowed it, was

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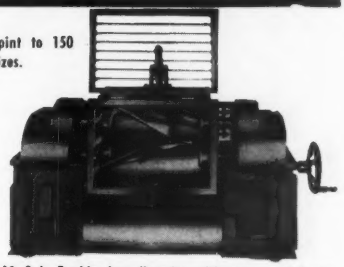
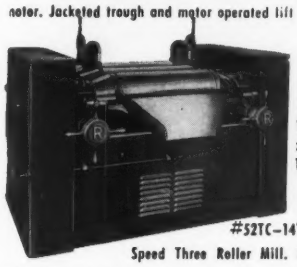
• 1 pint to 150 gal. sizes.



#41L–10 Gal. Double Arm Kneader with two speed brake motor. Jacketed trough and motor operated lift optional.



• 4½ x 10, 6 x 14, 9x24, 12 x 30, 14 x 32, 16x40" sizes.

#52TC–14" x 32" High Speed Three Roller Mill. Hydraulic adjustment and pressure recording gauges optional.

#30C–50 Gal. Heavy Duty Change Can Mixer. Adjustable outer scraper, cover with charging port, and gates on cans optional.

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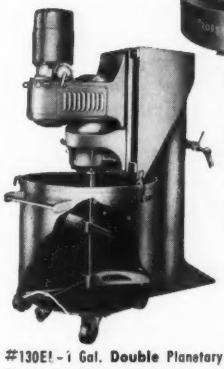
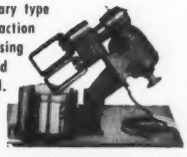


#130H–250 Gal. Change Tank Mixer with hydraulic raising and lowering and variable speed motor. Various type stirrers and high speed impellers optional.

• 80,150 and 250 gal. sizes.

#130E–1 Gal. Double Planetary type Change Can Mixer with shearing action stirrers, and variable speed reversing type motor. Jacketed cans and portable trucks for cans optional.



• 1, 2, 3, 4, 6, 15, 25, 50, 65, 85, 110 and 150 gal. sizes.

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simply the transfer of the column packing itself from the enrichment column to the separation column. The latter is purposely underfilled so that several runs can be made before the added packing fills the vacant heated zone. It is important for this purpose to use aged column packing, since fresh packing, even heat-treated, is likely to give rise to false components. After addition of the packing from the enrichment column, a minute or so should elapse to allow equilibrium to be reached before restarting the gas flow.

Naturally, as the column packing increases, retention times increase, and allowance has to be made in interpretation of results, or a standard calibration mixture run after every column addition. Furthermore, the high water content of the added packing may alter the usual behavior of the column. This effect is most pronounced with polar (for example, polyethylene glycol) columns used for retarding water. The packing of the pre-column need not be the same as that of the separation column, and, in fact, advantageous use can often be made of different packings.

The low temperature bath used for cooling the enrichment column is not intentionally being used as a cold trap, although undoubtedly direct condensation can occur if components are present in large amount. In any case, the concentration of breath volatiles is so low that it is dubious that the vapor pressure of the liquid or solid forms of the volatiles, even at liquid nitrogen temperatures, is ever exceeded. Solvent trapping is a far more efficient means of collecting the desired volatiles. When the column substrate is used as the solvent in the pre-column or trap, the adjunct of low temperature should be considered only as a means of slowing the passage of volatiles through the pre-column. With some substrates, too low a temperature may even be undesirable from the point of view of low transfer efficiency. In any case, unnecessary cooling of the pre-column invites problems.

The most important factor in choosing the temperature for the pre-column or enrichment column, is the temperature of the separation column. The pre-column should be 75° C. to to 100° C. cooler than the separation column, assuming that the separation column temperature has been chosen logically with some particular analysis in mind. In analyses of this type, as in other analyses for trace materials in large excesses of obscuring material, certain compromises must be made, since the conditions for best detection of a particular trace material would be peculiar to it and by no means suited to best detection of other trace materials that are also present in the mixture.

In gas chromatography, concentration is plotted against time, so that the sooner any given substance is eluted, the better will be the chance of its detection above the background of electrical noise and column bleeding and decomposition. This indicates that, for

analyses of complicated mixtures of trace substances, no one set of chromatographic conditions will allow best detection of all components and that columns or temperatures, or both, will have to be changed for the best chances of obtaining the complete picture.

As a practical matter, two or three columns will suffice if used at, say, room temperature, 100° C., and 175° C. In these cases, the corresponding pre-columns would be at dry ice temperature, room temperature, and perhaps 80° C. There is no sense in trapping material that cannot be analyzed and that may even, as in the case of water, interfere with the detection of other components.

(*This is part one of a two-part article.*)

PANTHENOL IN COSMETICS

(*Continued from page 43*)

in Europe and other parts of the world. The properties of panthenol which make it a desirable addition to hair lotions are as follows:

(1) Pantothenic acid is a normal constituent of healthy hair.[5]

(2) Topically applied panthenol increases the pantothenic acid content of hair.[5, 6]

(3) Panthenol adds luster to the hair and is an excellent grooming agent without contributing oiliness or objectionable stickiness.

Application in Aerosol Hair Sprays. Aerosol hair sprays have come into the category of hazardous aids to beauty, despite careful directions for their application. Polyvinyl alcohol, polyvinyl pyrrolidone and certain types of resins, used as hair wave setting materials, have been questioned as health hazards when inhaled from aerosol sprays.[34, 35]

Laboratory and application tests on live models indicate that very suitable aerosol hair spray formulations can be prepared using panthenol as a hair setting ingredient. The factors making panthenol a desirable addition to hair lotions also apply to hair sprays. Pharmacological tests have shown that panthenol in aerosols is non-toxic and presents no health hazard.[36] As reported below, no gross toxicity was found in subacute or acute inhalation tests.

Application in Lipsticks. A lipstick containing panthenol has been marketed for some time. In view of the irritations to which the lips are subject, both from natural causes and from lipstick ingredients, to which some individuals are sensitive, the incorporation of a healing agent such as panthenol appears to have merit.

Application in Lotions. Cosmetic producers have perenially sought a safe, effective healing agent for use in hand lotions. Such an agent is now available in

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Zinc oxide is widely used in dermatology in the form of zinc oxide ointment and calamine lotion.

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* *The Dispensatory of the United States of America, 1950 Edition*

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(*Continued from page 107*)

the form of panthenol. Panthenol can be easily incorporated in standard hand and body lotion formulae for its protective and healing characteristics.

Application in Creams. Panthenol is presently an active ingredient in several commercially established therapeutic pharmaceutical creams claimed to have emollient, protective, antipruritic and healing properties. These creams are indicated for use in the treatment of irritated or chafed skins, dermatoses, sunburn and other skin disorders. The properties of panthenol which justify its use in pharmaceutical creams indicate that the incorporation of panthenol into cosmetic creams would result in superior products.

Application in After-Shave Lotions. The known value of panthenol preparations in the treatment of skin abrasions, irritations, wounds and burns make this compound a logical ingredient for incorporation in after-shave lotions.

Application in Antiperspirant Products. Many of the antiperspirant preparations on the market today are irritating to the skin to some degree, especially when applied frequently. Here, also, the incorporation of panthenol appears desirable for this class of products.

The above examples indicate the general area of usefulness of panthenol in cosmetic preparations. Some typical formulas of cosmetic preparations containing panthenol are given below:

PANTHENOL CREAM

A	Stearyl alcohol	16.50%
	White petrolatum	7.00%
	Cetyl alcohol	1.50%
	Nipasol	0.05%
	Myrj 52	4.00%
B	Distilled water	57.75%
	Propylene glycol	12.00%
	d-Panthenol	1.00%
	Nipagin	0.20%

Preparation: Heat A to 65°C. Heat B to 65°C and add to A with stirring. Cool with agitation and stir until cold.

PANTHENOL LIPSTICK

d-Panthenol	1.0%
Bromo acid	3.0%
Butyl stearate	1.0%
Isopropyl myristate	1.0%
Pigments	9.0%
Castor oil	56.0%
Lanolin anhydrous	5.0%
Mineral oil light	4.0%
Stearyl alcohol	1.0%
Nipasol	0.2%
Beeswax white	11.8%
Carnauba wax	2.0%
Ozokerite	4.0%
Perfume	1.0%

Preparation: Melt the fats and waxes. Add and dissolve the nipasol. Dissolve the bromo acid in the castor oil and add. Mix the d-panthenol and isopropyl myristate and butyl stearate and add. Then add the pigments and perfume.

PANTHENOL AEROSOL HAIR SPRAY

A	d or dl-Panthenol	1.0%
	Lanogel 21	0.5%
	Zelek NK	0.1%
	Perfume	q.s.
	Alcohol SDA #40	28.4%
B	Freons 11/12 (60/40)	70%

Preparation: Mix A, chill overnight at 4°C. and filter clear. Add B by cold process and fill into aerosol cans.

PANTHENOL PIGMENTED CREAM

A	Nipasol	0.05%
	Stearic acid	12.00%
	Isopropyl myristate	1.00%
	Arlacel 60	2.00%
	Tween 60	1.00%
B	Sorbo (70% sorbitol solution)	3.00%
	Propylene Glycol	11.50%
	Titanium Dioxide	2.00%
	Talc	8.00%
	Iron oxide	1.00%
	Distilled water	57.25%
	Nipagin	0.20%
	d-Panthenol	1.00%
C	Perfume	q.s.

Preparation: Heat A to 90°C. Heat B to 95°C. Add B to A slowly with constant agitation. Add C at 45°C.

PANTHENOL AFTER-SHAVE LOTION

Hyamine 10X	0.250%
Alcohol SDA #40	40.000%
Menthol	0.005%
Ethyl p-aminobenzoate	0.025%
d-Panthenol	0.500%
Distilled water	59.220%
Perfume	q.s.
Color	q.s.

Preparation: Dissolve the menthol, ethyl p-aminobenzoate and perfume in the alcohol, dilute with the water solution of panthenol and clarify by chilling and filtering. Add the hyamine and color.

PANTHENOL POWDER

Talc	79.3%
Zinc oxide	10.0%
Oxyquinoline benzoate	0.2%
d-Panthenol	0.5%
Magnesium stearate	10.0%
Perfume	q.s.

Preparation: Absorb the panthenol on a portion of the talc. Add the remaining ingredients, perfume and mix until uniform.

Toxicology

d and dl-Panthenol are non-toxic and non-irritating. No gross toxicity was found in subacute one month inhalation studies conducted by a leading toxicology laboratory.[36] No gross toxicity was found in acute toxicity tests wherein the test animals were maintained in a concentrated panthenol mist for six hours. Copious amounts of panthenol aerosol formulations did not exert a deleterious effect on the intact skin of rabbits. Subacute toxicity feeding studies showed both d- and dl-panthenol to be relatively innocuous when fed orally to rats at levels of 20 to 200 mg/kg per day for 13 weeks. Doses up to 500 mg are administered parenterally to patients.

Summary

Panthenol, the alcohol analog of pantothenic acid, is a stable biologically active form of pantothenic

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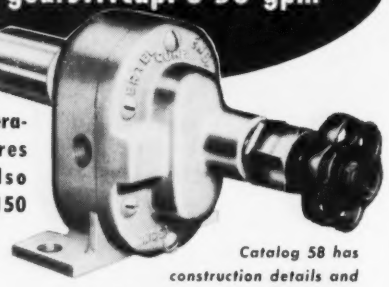

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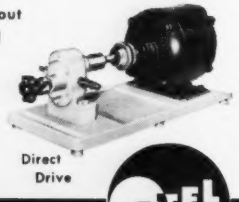

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acid, a vitamin of the B-complex group essential for growth and normal maintenance of the skin and hair. In experimental animals, one of the main effects of a deficiency of pantothenic acid is the development of lesions of the skin or hair. Ample evidence is available to demonstrate the conversion of panthenol to pantothenic acid after topical application. Panthenol has been used successfully as a healing agent in the treatment of a variety of skin disorders in the form of topical preparations. In view of the evidence that panthenol penetrates the skin, and that topical application provides a safe, beneficial treatment of various skin conditions, the incorporation of panthenol into skin creams, lipsticks, after-shave lotions and hair preparations is justified. Panthenol can be incorporated into standard cosmetic formulations with no adjustments other than maintaining the *p*H conditions for the optimum stability of the vitamin compound. The properties and toxicology of d- and dl-panthenol as regards their applications in cosmetic preparations are presented.

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THE SOPHISTICATED PATIENT

(*Continued from page 45*)

and it is worrying about how to get rid of it," then you have a truly disturbing reflection of the present-day assessment by a sophisticated public of its health guardians. What about its asseessment tomorrow?

(5) The marketing director of a large drug house recently remarked: "We are accused of introducing too many new products." He also said, "The last

ten years have been notable for a growing awareness by us of our position on the American medical scene. Millions of watchful and sometimes hostile eyes are upon us. There is sharp questioning of our motives and ideas. We are no longer private businesses; we have been likened to a public utility on a national scale."

Those millions of watchful and sometimes hostile eyes are the eyes of a public that, very rightly, looks upon the pharmaceutical industry as a type of public utility. It took the power and gas utilities years to learn how to live up to their public responsibilities. Is the ethical drug industry dropping behind in this new art?

(6) Public complaints involving charges of high doctors' fees, high hospital costs, high drug costs, are snowballing. They can be ignored only at considerable peril.

(7) The druggist is under a mounting public attack. He bears the brunt of a mounting public antagonism. One evidence is the first rumbling of prepaid prescription insurance. Some new programs offer a 25 per cent discount on prescriptions for the elderly. Will it stop there?

Every assessment made lately of the public attitude toward the pharmacist has produced depressing results. It is amazing how many people know that today the druggist rolls few pills. It is amazing how many people know, when they are told to come back two hours for a prescription, that the druggist actually requires only two minutes to fill it.

(8) There are other indications of the new attitudes of the sophisticated segments of our society toward everyone involved in public health. Our great unions are showing a considerable interest in medical costs. Women's clubs are debating the subject—actually, these are not debates but rather declarations of unanimous agreement.

I do not propose to enumerate more of the accumulating evidence of the current appraisal of the more sophisticated segments of our society concerning its health guardians. But I would urge this industry to weigh the following:

All this unrest, all this questioning, reflects a new sophistication among millions of our people. A sophisticated people may get silly notions, but it is seldom wise to brush aside these new convictions.

Even though these more intelligent people may be a minority of our population, they are highly vocal, they are well organized. Also, they tend to be in our higher-income groups which represent the choice market for new drugs. Discount neither their ability to sway Government and the masses, nor the size of their requirements for your new drugs. Do not fall back on your integrity—it is not a safe posture when an industry is under attack.

Suggestions for a New Statesmanship

The pharmaceutical industry may have need for

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a new brand of ethical statesmanship. I make bold to offer some suggestions to that end.

(1) Competition at times leads to excesses. Segments of the public now believe that competition among the drug manufacturers in order to be the first with the most in new drugs is *not* always in the public interest.

Your industry has drawn up a Statement of Principles on Ethical Drug Promotion. That is praiseworthy. But perhaps more important would be a statement of principles on New Ethical Drug Introductions! *That* could be called industrial statesmanship.

(2) Then, there is your code of ethical drug promotion. An ethical drug marketing executive, in a recent address to the industry, remarked: "Pharmaceutical promotion should be like Caesar's wife—beyond suspicion. It isn't all of it beyond suspicion today. But it had better get that way mighty quickly if it is going to survive intact."

I surmise from that remark that pharmaceutical promotion is no more beyond suspicion than was Caesar's wife!

Industrial statesmanship in an ethical industry would call for more than a mere statement of principles of promotion, it would call for rigid enforcement of those principles. Without police powers, codes of practice tend to have little effect in a competitive society.

(3) Presumably, as ethical drug manufacturers, it woud not be permissible for you to advertise to the public. But industrial statesmanship might suggest taking a second look at that position.

Today, the pharmaceutical industry knows, and generally admits, that it is uncomfortable under public scrutiny. There are at least two starting points in a program designed to alleviate this kind of situation. The first is to correct the circumstances causing public disfavor. Although the ethical drug industry is not guilty of malpractice to the degree true of advertising, its record is not without blemish.

The second is to then use traditional channels of mass communication to establish in the minds of the public the new professional image.

I would assume, with respect to the second, that the doctor might now be less averse to your messages to the public, since his own future is also wrapped up in achieving a better public image! He wants socialized medicine even less than you do.

I should also point out that the ethical drug industry really uses mass communication techniques. To cite a single example, the ethical drug manufacturer usually has a substantial public relations program. As part of this program, releases are sent out to the lay press. *That is advertising.*

The only difference between advertising and your public relations program is that advertising is bought at card rates, whereas you never know the cost of

(*Continued on page 115*)

Reader's Questions . . .

Sunscreen Selection: *In formulating a sunscreening preparation, what properties do you consider to be most important for the screening compound itself?* MIAMI

First of all, yet likely to cause you least trouble, is consideration of the actual absorption power of the screening compound. In the concentration used, and under the conditions of use, it must prevent the passage of the burning range of light waves, 2900 to 3200 A.U., and pass the longer tanning rays. These longer rays are supposed to promote the movement of preformed melanin into upper skin layers; permanent tanning seems to be related to the low-order erythma resulting from controlled passage of burning rays. Ample data concerning absorption spectra are available from suppliers and can form a good basis for selection. The selection must also consider matters of skin irritation, inactivation of the screen by the action of sunlight, discoloration caused by the screen, and side reactions, such as percutaneous absorption and anesthetic action. Here again, the supplier should be able to provide experimental data based upon wide usage, to confirm the safety of the compound.

Once matters of technical performance have been determined, the important consideration is the matter of economics. Equivalent effects may be obtainable from two different compounds, one at a 2 per cent concentration, the other at 8 per cent. If the less active compound is available at a price less than one-fourth of the other, then the weaker compound is a better value for the manufacturer, with no sacrifice of quality for the consumer. Occasionally a limiting factor may lie in the difficulty of developing a formula with a larger amount of screen. It must always be remembered in making suntan solutions and emulsions in which part of the vehicle evaporates to leave an active layer on the skin, that a film must be deposited, not merely the original crystalline compound. Either the screen must be amorphous, to form a continuous layer, or it must be dissolved in a nonvolatile liquid.

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(*Continued from page 112*)

the lineage you get through publicity. Moreover, in paid advertising you can control your message; in publicity, heaven help what happens to some of your releases!

It may well be that, for all of the reasons I have mentioned, it is high time that the ethical drug industry—as an industry—formulated a program of paid messages to the public.

Industrial statesmanship would have no difficulty in determining suitable subjects for public presentation that the medical profession would welcome. The Metropolitan Life Insurance advertising program, with its discussions of specific ills, offers this industry one clue for its paid messages to the public. I have heard no medical objections to it.

There are many worthy subjects for public communication. For example, I read recently that many patients insist on getting the new wonder drugs. I have also read about parents who insist on a tonsil operation for children against current medical views. Messages on these subjects, keyed to the more sophisticated segments of our population who are our opinion moulders, might serve several purposes.

Then, there is the subject of medical costs. One of the great ethical drug houses, in a message to the druggist, has urged that these complaints should not be brushed off by the druggist. That was good advice —indeed, it is good enough advice to be heeded as well by the ethical drug producers.

(4) Statesmanship would call for great scientific studies by the ethical drug industry *as a whole*. Perhaps the industry should finance explorations in theoretical science. Why not establish a drug counterpart to the Princeton Institute for Advanced Study? I think this could properly be called statesmanship.

(5) Currently, Russia seems to be making a bid to become family doctor to Asia, Africa, and South America. Statesmanship in your industry might call for a united program, not merely to counter this move to win the uncommitted nations of the under-privileged, but to assume the leadership. Winning this race could be at least as important as winning the space race.

(6) Your industry tends to be highly inbred. You tend to listen only to yourselves. Statesmanship might call for bringing in a disciplined outside viewpoint, and giving due weight to its concepts. An inbred industry worships the past. Your industry must look, especially in its public attitudes, to the future.

(7) There is the grave problem of the present and future shortage of physicians. Some of your problems stem from this situation. What is this industry, doing as an industry to alleviate this situation? Maybe a shrewd revolving financing plan for support both of colleges and of deserving students would be not merely sound public and professional relations for your industry, but also a mitigation of some of your problems that stem from the physician shortage.

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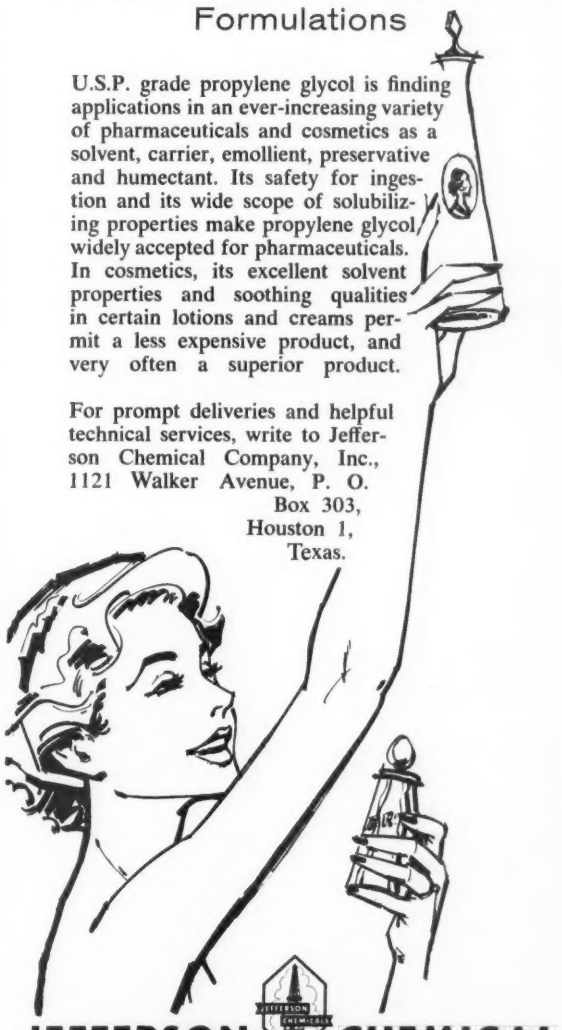

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(8) Perhaps statesmanship in your industry might call for an industry-sponsored group of awards for medical progress similar to the Nobel Prize and which, in time, would come to occupy the same status as the Nobel awards.

(9) Your detail men calling on doctors may be overdue for re-examination. When I note that hundreds of druggists have so-called new drug sections for the doctor's information, it appears that the detail man is not doing his job too well. The detail may be a hold-over from the day when the doctor had time for both patients and the detail man. Today, the doctor has too little time for his patients.

Maybe cooperative action by this industry could at least supplement the impossible task of the detail man—I understand a detail call costs about $10 for no more than two or three minutes. No other industry spends so much to accomplish so little!

Some day this industry may sponsor vast closed-circuit TV talks for thousands of doctors. *That* might qualify as statesmanship and sound selling economy.

Very recently five pharmaceutical companies took a step in this direction by sending closed-circuit FM radio messages to doctors' offices on O-T-C ethicals.

(10) I understand that many similar medicinal preparations are now labeled with two or more names. Some confusion results. This is not in the public interest. Surely industry cooperation could eliminate this situation, and others that may be more important.

(11) In several papers by industry members, I note a bit of uncertainty as to whether your customer is the physician or the patient. Your industry gives by far the lion's share of its attention to the doctor. yet I see such comments by members of the industry as: "The physician is our customer, but in another sense the patient is our customer." That is a neat hedge. Isn't the time for hedging gone?

I believe that that "other sense" is becoming more and more important. The patient is indeed your customer—and I suggest that much of your planning for the future will give additional weight to the public, and will involve more direct communication between your industry and the public.

At least one ethical pharmaceutical producer has begun to advertise O-T-C ethical drugs to the public. Obviously, the line of demarkation between O.T.C. items and proprietary medicines is becoming so vague as to be almost indistinguishable.

Maybe this crack in the ethical wall that has isolated your industry from the public will widen into a sizable breach. A more sophisticated public is ready to support such a move. The march of progress toward such a sophisticated public is eroding some of the traditions of a tradition-bound industry. Roadblocks are hardly the answer.

This entire profession and industry is getting a bad press—some of it originating from within the profession. Just last week, for example, the president of the American Medical Association was quoted in the newspaper as saying: "Doctors should write fewer prescriptions. This goes for other drugs as well as tranquilizers."

When asked by a reporter, "How about the patient who insists on a shot of penicillin every time he gets a cold?", the president of the American Medical Association gave this choice bit of advice:

"It's the obligation of the physician to unsell the patient who demands such a thing. It's easier to give a shot than to explain—but a doctor's duty is to do what's right, not what's easy."

Your industry will unquestionably get an increasingly bad press in the near future. Your necessarily high margins will be exposed to public scrutiny without proper explanation. There will be more articles like the one in the *Wall Street Journal* last week which told about a reporter armed with four identical prescriptions who visited four New York drug stores. The price he was charged for the identical drug of identical quantity ranged from $0.98 to $3.95!

You will not be able to counter this mounting attack with your traditional releases. You will not get adequate space to make such points as the fact that you make one of the highest industrial research outlays in the country. At least five million American adults are alive today because of your research. Does the public know it?

Your industry as an industry needs a program of statesmanship, and you need it seriously and promptly.

METAL CONTAINERS

(*Continued from page 99*)

supply of raw materials; and it would give us a second major can-making metal.

On the debit side, aluminum has less strength than steel, requiring about 50 per cent greater thickness for comparable resistance to panelling, buckling, and abuse. Since it is not solderable on can-making lines, its use is confined to cans with cemented side seams or to cans produced by drawing or extrusion. Although it has better resistance to some specific products, in general aluminum is more susceptible to attack by corrosive liquids than tinplate. This can be surmounted largely by the development of suitable enamels, which is a technology all of itself. Most of the wide variety of coatings developed for tinplate or steel are not suitable for aluminum, without modification.

Our company has carried on research with aluminum for many years, but only in the last few years have the economics of aluminum justified intense research activity. We consider the technology of aluminum as a can-making material to be in its infancy,

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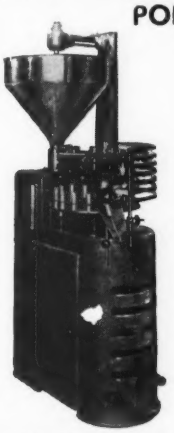

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BOOK DEPARTMENT

Drug & Cosmetic Industry
101 West 31st St., New York 1, N. Y.

but it appears to be a healthy baby. How fast it will grow appears to depend largely on the future price trends of aluminum and steel.

Organic Coatings

The important role of organic coatings must be included in this discussion of metal containers. Except when used for dry products, successful can performance usually depends on the internal coating, as well as on the metal.

Coatings are usually applied to plate in the flat sheets, which means that they must withstand severe fabricating abuse. Doublecoat enamel systems with an extra stripe at the side seam are used for many products sensitive to small amounts of dissolved metal. Some can sizes are available in which the top coat is sprayed in the can fabrication, providing maximum coverage. Some general requirements of a good can enamel are: flexibility; resistance to abrasion, scratching and fracture; good adhesion to the plate; product resistance; high heat resistance for soldered side-seam cans; and nontoxicity when used for food and pharmaceutical products. It also must be available in quantity at a reasonable price.

The important inside enamels used in metal containers may be broadly classified in the following types according to their chemical makeup: phenolics, both heat reactive and oil reactive; epoxy resins, both thermosetting and esterified; vinyls, including many modifications; oleoresins; and polybutadienes, alkyds, and acrylics. Within each of these groups there are many formulations and modifications, each having specific properties especially suited for a particular application. Our laboratories are constantly testing new materials submitted by outside suppliers, as well as the formulations developed by our own scientists.

A notable contribution by our research laboratories has been the recent development of organosol coatings for containers. Conventional coatings consist basically of a solution of resins and drying oils in a solvent. By contrast, an organosol is a dispersion of a resin in a plasticizer thinned with a solvent. The resin particles remain dispersed in the applied coating until heated; then they dissolve in the plasticizer to form a film. This permits the use of tough, high molecular-weight resins.

The resultant organosol coatings are inert to most corrosive products. They are far tougher and more flexible than conventional coatings and can be applied in much thicker films. Consequently, virtually perfect coverage can be obtained. Organosol coatings are currently being used for certain chemicals and hard-to-hold liquid detergents. Now that the technology of formulation and the techniques of application are fairly well developed, we may expect wider use. These coatings are not as yet sufficiently heat-resistant for bodies of soldered side-seam cans, but further investigation may solve this obstacle.

An interesting by-product of the work with or-

ganosols is an unusual decorative effect that can be obtained. This is a case of turning a defect into an advantage. In the development of organosol coatings, many of the formulations had very poor wetting and flow characteristics, which resulted in severe manifestations of what we call ridging and eye-holing. When one color of these poor wetting materials is applied over another, some very unusual and attractive finishes for external container coatings may be achieved. The coating materials to produce these finishes are commercially available.

Plastic Parts

At this point it should be apparent that can manufacturers are eager to use whatever combination of materials will achieve the best results. Plastic parts have become common in the past few years, most notably in the so-called non-drip style can with plastic nozzle and cap. Some other applications of plastics are for dredges on shaker or sifter top cans, reclosure caps, retractable pouring spouts, and transparent insertions to serve as windows. Cans with plastic bodies and metal ends are being used commercially for both dry and liquid products. Most of the volume-produced plastics have a place in this picture, but the two materials having widest application at present are polyethylene and polystyrene. We must recognize that what was once a "tin can" industry has become hybridized, particularly insofar as specialty products are concerned. What I have said about metals for can making applies essentially to the metal parts of composite containers.

In conclusion, I would like to recapitulate what we believe are important trends in the metal container industry. These follow, not necessarily in order of importance:

(1) There is a continuing effort to elminate hot dipped tinplate, and a step-by-step movement to reduce electrolytic tin coating weights below their present levels wherever possible.

(2) Tinplate and steel plate will be used in gauges lighter than were heretofore considered practical.

(3) Aluminum will continue to make inroads on steel at a rate largely dependent on relative prices.

(4) As more production facilities go into operation to produce continuously annealed plate, its use will continue to expand.

(5) More products will go into containers with cemented side seams, with the goal of eventually including heat-processed and vacuum-packed items.

(6) Coil cutting of plate by can makers will effect further savings as its full potential develops.

(7) The trend toward the use of more tinless plate will continue.

(8) Organosol coatings will be used more widely and will permit the packaging in metal cans of products which could not be so packaged before.

(9) The use of plastic parts on metal cans will continue to grow. (*Continued on page 121*)

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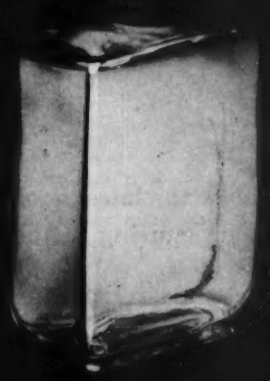
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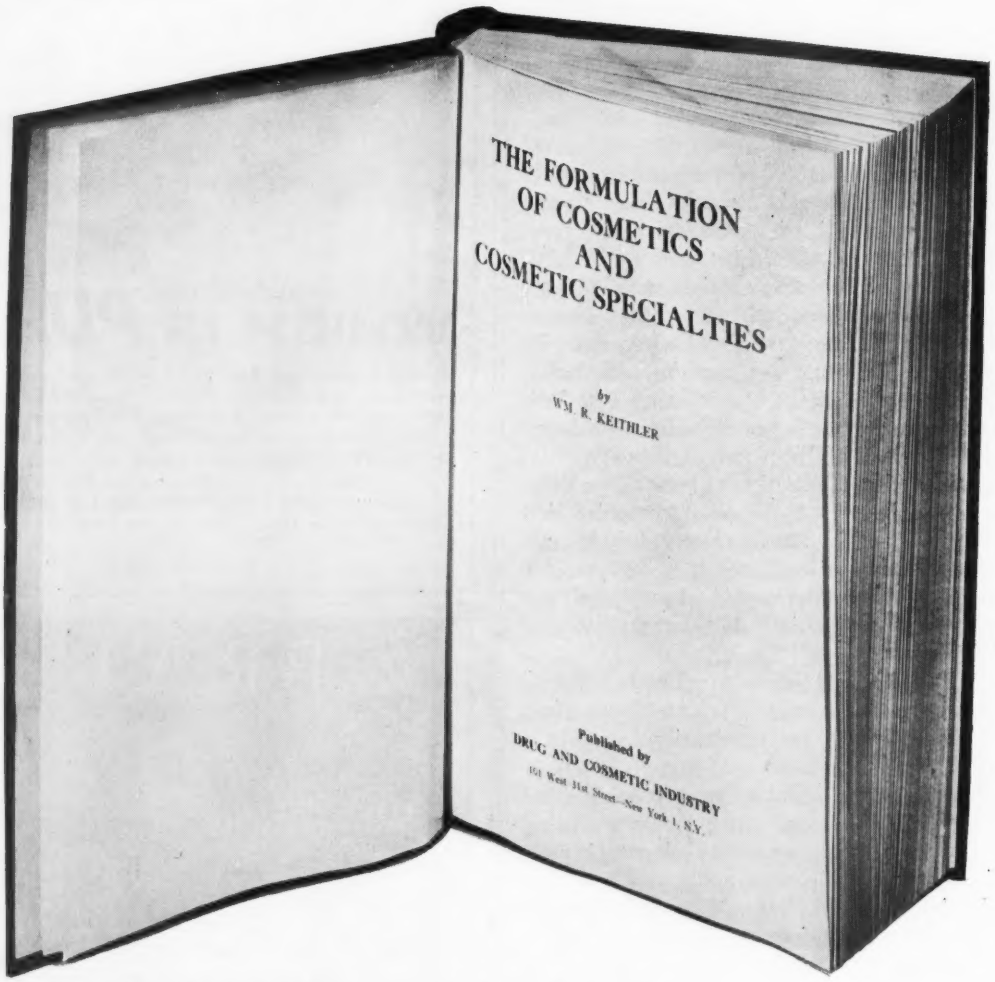

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BOOK DEPARTMENT

DRUG & COSMETIC INDUSTRY

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(*Continued from page 119*)

I have not stressed convenience packaging in my presentation, since I regard *all* packaging as convenience packaging. More to the point, however, I think you will agree that materials are basic, and there is little differentiation between the general subject of packaging and that of convenience packaging, when we speak of materials.

It should be apparent from these developments and trends in the metal container field, that this is a dynamic industry. No combination of materials which might serve to make the basic metal container more serviceable, more versatile, and more attractive is being overlooked. The art of offset lithography on metal is highly perfected, permitting fine detail where desired, beautiful color effects, and distinctive labels. It is expected that the continued growth and expanding acceptance of aerosol products will open new fields for metal cans in the pharmaceutical industry.

Finally, I would like to remind you of some of the inherent virtues of metal as a container material. Metal containers are highly resistant to shipping and handling damage, and are adaptable to high-speed filling and closure. They are shatterproof and light in weight. Metal is a perfect barrier to light, which damages some products. Its impermeability to gases prevents loss of volatiles, transfer of odors, and access of atmospheric oxygen and moisture to the product. All of these desirable properties are used to advantage in the approximately 42 billion metal containers produced annually in this country.

PATENT THOUGHTS AND TRENDS

(*Continued from page 66*)

ties are payable. Otherwise, he will find himself in the same position as the Lambert people are in today: paying substantial royalties many years after the formulation becomes public. This is all right for the licensor of a trade secret but rather hard on the licensee, who has to do the paying. Competitors of Lambert of course would be perfectly free to put out the same product without the need of making any payments to anyone.

RECENT PATENTS

2,907,761—Eastman Kodak—Vit. A Aldehyde Derivative.

2,907,764—G. D. Searle—Heterocyclic Esters of Trimethoxybenzoic Acid.

2,907,765-6—Abbott Labs.—Piperazines.

2,907,767—Chas. Pfizer—N-Nitrosopiperazine.

2,907,768—M. J. Lewenstein — Dihydrohydroxy-codeinone Derivative.

2,907,769—Les Labs. Francais Chim.—Yohimbanes.

2,907,772-3—G. D. Searle—Oxo Pyranyl Dimethylamine. •

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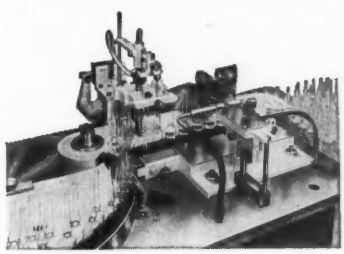

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COMING EVENTS . . . . .

JANUARY

21-22 **Folding Paper Box Assn. of America,** National Folding Carton Production Forum, Statler Hilton, N. Y. C.

27-28 **Chemical Buyers' Group, National Assn. Purchasing Agents,** western mid-winter meeting, Hotel Congress, Chicago, Ill.

FEBRUARY

2-4 **Society of the Plastics Industry,** Reinforced Plastics Division conference, Edgewater Beach Hotel, Chicago, Ill. (S.P.I., 250 Park Ave., N. Y. C. 17)

3 **Society of Cosmetic Chemists,** New York Chapter, monthly meeting, Hotel New Yorker, N. Y. C. (Dr. Saul Bell, S.C.C., 2 East 63rd St., N. Y. C.)

3-4 **Chemical Buyers' Group, National Assn. Purchasing Agents,** eastern mid-winter meeting, Hotel Commodore, N. Y. C.

3-5 **Pharmaceutical Manufacturers Assn.,** Legislative Section, Boca Raton Hotel, Boca Raton, Fla. (Dr. Karl Bambach, P.M.A., 1411 K Street, N.W., Washington 5, D.C.)

5 **Parenteral Drug Assn.,** scientific meeting, Statler Hotel, N. Y. C. (Hubert E. Boyden, P.D.A., 4865 Stenton Ave., Philadelphia 44, Penna.

8-10 **Pharmaceutical Manufacturers Assn.,** central regional meeting, Edgewater Beach Hotel, Chicago, Ill. (Dr. J. O'Neill Closs, 1411 K Street, N.W., Washington 5, D.C.)

11 **Pharmaceutical Advertising Club,** luncheon meeting, Hotel Roosevelt, N. Y. C. (D. Lindsay, P.A.C. Suite 608, 489 5th Avenue, N. Y. C.)

11 **B I M S** annual dinner, St. Regis Hotel, N. Y. C. (Eugene Moore, Richford Corp., 350 Fifth Ave., N. Y. C.)

15-16 **Pharmaceutical Manufacturers Assn.,** western regional meeting, Ambassador Hotel, Los Angeles, Calif. (Dr. J. O'Neill Closs—see above.)

25-27 **Symposium on Fundamental Cancer Research,** Univ. of Texas, Houston, Texas (Univ. of Texas, M.D. Anderson Hospital and Tumor Institute, Houston 5, Texas)

26-27 **Pharmaceutical Manufacturing Assn.,** traffic workshop during Drug and Toilet Preparation Traffic Conference, Biltmore Hotel, N. Y. C. (C. E. Brockman, Mallinckrodt Chemical Works, 3600 No. Second St., St. Louis 7, Mo.)

28 **American College of Allergists** (through March 5) Americana Hotel, Bal Harbour, Miami Beach, Fla. (Eloi Bauers, 2160 Rand Tower, Minneapolis 2, Minn.)

MARCH

2 **Society of Cosmetic Chemists,** New York Chapter, monthly meeting, Hotel New Yorker, N. Y. C. (Dr. Saul Bell, S.C.C., 2 E. 63rd St., N. Y. C.)

2-4 **Pharmaceutical Manufacturers Assn.,** Medical Section, Hollywood Beach Hotel, Hollywood Fla. (Dr. Karl Bambach—see above.)

3 **Drug, Chemical and Allied Trades Association, New York Board of Trade, Inc.,** annual dinner (Helen L. Booth, D.C.A.T., One Liberty St., N. Y. C. 5)

10 **Pharmaceutical Advertising Club,** luncheon meeting, Hotel Roosevelt, N. Y. C. (D. Lindsay—see above.)

13-18 **National Health Council,** national health forum, Miami, Fla. (Philip E. Ryan, 1790 Broadway, N.Y.C 19)

15-16 **American Broncho-Esaphogological Assn.,** Deauville Hotel, Miami Beach, Fla. (Dr. F. Johnson Putney, 1712 Locust St., Philadelphia 3, Penna.)

15-17 **American Laryngological, Rhinological and Otological Society,** Deauville Hotel, Miami Beach, Fla. (Dr. C. Stewart Nash, 708 Medical Arts Building, Rochester 7, N. Y.)

18-19 **American Laryngological Assn.,** Deauville Hotel, Miami Beach, Fla. (Dr. Lyman Richards, Massachusetts Institute of Technology, Cambridge 39, Mass.)

22-23 **Pharmaceutical Manufacturers Assn.,** Pharmaceutical Contact Section, Shoreham Hotel, Washington, D. C. (Dr. Carl Bambach, P. M. A., see above.)

23 **Oil Trades Assn.** of New York, Waldorf-Astoria Hotel, N. Y. C.

27-28 **American Pharmaceutical Assn.,** House of Delegates' interim meeting, Statler Hilton Hotel, Washington, D. C.

APRIL

1-2 **American Gastroenteral Assn.,** Roosevelt Hotel, New Orleans, La. (Dr. Wade Volwiler, Dept. of Medicine, University of Washington, Seattle, Wash.)

1-3 **American Society of Internal Medicine,** Mark Hopkins Hotel, San Francisco, Calif. (Robert L. Richards, 350 Post St., San Francisco 8, Calif.)

2-6 **American College of Obstetricians and Gynecologists,** Netherland Hilton Hotel, Cincinnati, Ohio (Donald F. Richardson, P. O. Box 749, Chicago 90, Ill.)

4-7 **Pharmaceutical Manufacturers Assn.,** annual meeting, Boca Raton Hotel, Boca Raton, Fla. (Dr. Karl Bambach—see above.)

4-7 **American Management Assn.,** national packaging exposition, Convention Hall, Atlantic City, N.J. (Packaging Exposition, Clapp & Poliak, Inc., 341 Madison Ave., N.Y.C. 17)

5-14 **American Chemical Society,** spring national meeting, Cleveland, Ohio (A. T. Winstead, A.C.S., National Meetings Dept., 1155 Sixteenth St., N.W., Washington 6, D. C.)

8-9 **Society of the Plastics Industry,** western section conference, New Riviera Hotel, Palm Springs, Calif. (S.P.I., 250 Park Ave., N. Y. C. 17)

8-12 **American Dermatological Assn.,** Boca Raton Hotel, Boca Raton, Fla. (Dr. Wiley M. Sams, 308 Ingraham Bldg., Miami 32, Fla.)

11-15 **American Assn. of Immunologists,** Chicago, Ill. (Dr. Calderon Howe, Columbia University College of Physicians and Surgeons, N.Y.C. 22)

11-16 **American Society of Biological Chemists,** Chicago, Ill. (Dr. Frank W. Putnam, Dept. of Biochemistry, Univ. of Fla., Gainesville, Fla.)

14 **Pharmaceutical Advertising Club,** luncheon meeting, Hotel Roosevelt, N. Y. C. (D. Lindsay, P.A.C. Suite 608, 489 Fifth Ave., N. Y. C.)

17-19 **Animal Health Institute,** annual meeting, Shoreham Hotel, Washington, D. C.

20 **Society of Cosmetic Chemists,** New York Chapter, monthly meeting—ladies' night, Hotel New Yorker, N. Y. C. (Dr. Saul Bell, S.C.C., 2 East 63rd St., N. Y. C.)

25-26 **Society of the Plastics Industry,** Canadian section, London Hotel, London, Ontario, Canada. (S.P.I.—see above.)

28-30 **American Assn. of Pathologists and Bacteriologists,** Hotel Peabody, Memphis, Tenn. (Dr. Russell L. Holman, Dept. of Pathology, L.S.U. School of Medicine, New Orleans, La.)

29 **Parenteral Drug Assn.,** scientific meeting, Warwick Hotel, Philadelphia, Penna.

MAY

4-7 **Flavoring Extract Manufacturers Assn.**, annual convention, Traymore Hotel, Atlantic City, N. J.

7-13 **Society of the Plastics Industry**, national conference and annual meeting, cruise on the "Queen of Bermuda." (S.P.I., 250 Park Ave., N. Y. C. 17)

8-11 **Proprietary Association**, annual meeting, The Greenbrier, White Sulphur Springs, W. Va. (Dr. Howard A. Prentice, 810 18th St., N.W., Washington 6, D.C.

11 **Toilet Goods Assn.**, Scientific Section, Waldorf-Astoria Hotel, N.Y.C. (Kathryn Fitzpatrick, Americas Bldg., Rockefeller Center, N.Y.C. 20)

11-13 **Synthetic Organic Chemical Manufacturers Assn.**, annual spring outing, Shawnee-on-Delaware, Penna. (S. Stewart Graff, S.O.C.M.A., 41 East 41st St., N. Y. C. 17)

12 **Pharmaceutical Advertising Club**, promotion clinic, Hotel Roosevelt. (D. Lindsay, P.A.C., Suite 608, 489 Fifth Ave., N. Y. C.)

15-18 **Proprietary Assn.**, annual meeting, The Greenbrier, White Sulphur Springs, West Va.

16-18 **Chemical Specialties Manufacturers Assn.**, mid-year meeting, Drake Hotel, Chicago, Ill. (C.S.M.A., 50 E. 41st St., N.Y.C 17)

19-20 **Pharmaceutical Manufacturers Assn.**, Production and Engineering Section, The Broadmoor, Colorado Springs, Colo. (Dr. Carl Bambach, P.M.A., 1411 K Street, Washington 5, D. C.)

JUNE

9-11 **Manufacturing Chemists Assn.**, annual meeting, Greenbrier Hotel, White Sulphur Springs, West Va.

12-15 **Extension Services in Pharmacy**, annual national industrial pharmaceutical research conference (stabilization and stability testing of pharmaceuticals), King's Gateway. Land O' Lakes, Wisc. (Richard S. Strommen, E.S.P., Univ. of Wisconsin, Madison, Wisc.)

13-17 **American Medical Assn.**, annual meeting, Miami Beach, Fla.

13-17 **Pharmaceutical Advertising Club**, annual P.A.C.-M.P.A.C. joint meeting.

27-30 **Toilet Goods Assn.**, annual convention, Poland Springs House, Poland Springs, Maine. (Kathryn Fitzpatrick, Americas Bldg., Rockefeller Center, N. Y. C. 20)

28 **Oil Trades Assn. of New York**, golf outing, Siwanoy Country Club, Bronxville, N. Y.

JULY

19-21 **Western Packaging & Materials Handling Exposition**, Pan Pacific Auditorium, Los Angeles, Calif. (Western Packaging Exposition, Clapp & Poliak, Inc., 341 Madison Ave., N. Y. C. 17)

AUGUST

14-20 **American Pharmaceutical Assn.**, annual convention, Shoreham-Sheraton Park, Washington, D. C.

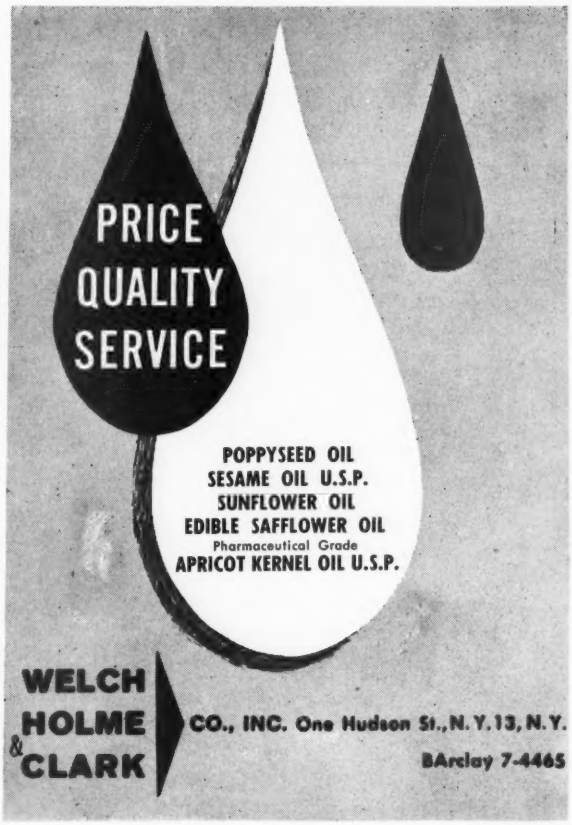
15-19 **American Veterinary Medical Assn.**, national meeting, Denver, Colo. (Brian M. Foster, A.V.M.A., 600 So. Michigan Ave., Chicago 5, Ill.)

SEPTEMBER

8 **Pharmaceutical Advertising Club**, luncheon meeting, Hotel Roosevelt, N. Y. C. (D. Lindsay—see above.)

11-16 **American Chemical Society**, national meeting, N. Y. C. (A.C.S., National Meetings Dept., 1155 Sixteenth St. N.W., Washington 6, D. C.

12-14 **Pharmaceutical Manufacturers Assn.**, International Section, The Greenbrier, White Sulphur Springs, W. Va. (Dr. Carl Bambach, P.M.A.—see above.) •



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